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the efficiency
and enhance
the beauty
of your
refrigerator cabinets
by using
thicker walls
of insulation**

DRY-ZERO CORPORATION, MERCHANDISE MART, 222 NORTH BANK STREET, CHICAGO, ILLINOIS

DRY·ZERO

THE MOST EFFICIENT COMMERCIAL INSULANT KNOWN

ELECTRIC REFRIGERATION NEWS

Registered U. S. Patent Office.

The business newspaper of the refrigeration industry

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REFRIGERATION MAKES BIG GAINS

RECORD ATTENDANCE AT A.S.R.E. MEETING REVIEWS INDUSTRY

Alvin H. Baer Takes Office as
President of Society

New York, N. Y.—One of the best attended and most successful conventions in the history of the American Society of Refrigerating Engineers was held here in the Hotel New Yorker, December 3, 4, 5 and 6. The big and comfortable meeting room was well filled at every session, and at the opening session on the afternoon of December 3 a hurry call for more chairs proved necessary. The records show a total of 540, including guests, as compared with 315 last year.

The Convention marked the close of the term of Harry D. Edwards, and the election to the A. S. R. E. presidency of Alvin H. Baer, of the Frick Company, Waynesboro, Pa. The cares and honors of the office were turned over to Mr. Baer and relinquished by Mr. Edwards at the annual banquet and jamboree held on the evening of December 5.

Other new officers elected were Alfred W. Oakley, vice-president; Harry Harrison, treasurer, and the following directors: C. Thomas Baker, Atlanta, Ga.; Charles W. Berry, Cambridge, Mass.; Clarence Birdseye, Gloucester, Mass.; Eugene M. Dodds, Kansas City, Mo.; Robert T. Frazier, Chattanooga, Tenn. These new directors will serve for three years. Glenn Muffly holds over as vice-president, and David L. Fiske, of course, remains as secretary. The other two groups of directors also hold over.

The Convention began with a registration luncheon, at the conclusion of which the model of a cold storage warehouse that is to be displayed permanently at the scientific museum in this city, was shown for the first time. Dr. C. R. Richards, who is in charge of the museum, and the designers and builders of the model spoke briefly.

Evidently attracted by the title, "Refrigeration and Food," the biggest crowd of the Convention attended the first session. Included in the audience were a large number of guests, among them representatives of several of the leading women's magazines. They came because of the great interest of their readers in quick-frozen foods. Speakers at the session were Frank Zumbro, research engineer of the Frick Company, who described some recent applications of low temperature equipment, including the set-up of the Tom Huston peach freezing plant at Montezuma, Ga.; Professor W. R. Woolrich, of the University of Tennessee, on latent heat in foodstuffs;

(Concluded on Page 2, Column 3)

A NAME IN VAIN

ONE of the brightest spots at the A. S. R. E. Convention in New York came on the opening day, when Paul Willer Petersen, inventor of quick freezing processes and plaintiff in the pending patent suit against General Seafoods, was speaking. In his preliminary remarks, while he was outlining the subject of his most interesting paper on food freezing temperatures, Mr. Petersen said to his big audience, "I am going to give you a bird's-eye view of the situation. The laughter that swept through the room pulled Mr. Petersen up short, but he quickly realized the unwitting joke and continued.

Refrigeration Units

SPECIFICATIONS of refrigerating units made by advertisers in this issue of Electric Refrigeration News, are tabulated in the Buyer's Guide or Pink Section. These tables will be found beginning on Page 4.

At this time of year when the industry is squaring away for a busy twelve months during 1931, the publication of these specifications gives the readers of the News an opportunity to check up on the mechanical output of many of the leading refrigerator manufacturers.

Government Figures Reveal Rapid Progress of Industry

Washington, D. C., Dec. 17.—Basing its figures on returns from 32 manufacturers whose principal business is the production of mechanical refrigerators, the Bureau of the Census announced today figures which show the remarkable progress which the refrigeration industry is making. These figures, which are part of the preliminary census of manufactures, cover refrigerators shipped and delivered during 1929.

Comparison with the 1927 figures, the last year in which this census was taken, reveals an increase of 62.9 per cent. No figures are available for 1930, but those identified with the refrigeration industry, and acquainted with what has been accomplished this year, will have little difficulty in making reasonably accurate estimates based on the 1929 statistics. The report of the Bureau of Census follows:

"Mechanical refrigerators shipped or delivered last year by establishments in the United States engaged primarily in such production were valued at \$147,000,587, an increase of 62.9 per cent, as compared with \$90,272,754 reported for 1927, the last preceding census-of-manufactures year.

"Last year's total, which is based on f. o. b. factory prices, was made up as follows: 596,164 domestic electric refrigerator units complete with cabinets, valued at \$101,980,589; 67,908 electric refrigerator units without cabinets, \$8,589,478; 52,132 ice cream cabinets, \$8,488,325; 30,433 water coolers, \$3,387,393; evaporators and compressors without cabinets, \$10,264,962; other products, including absorption-type refrigeration systems, \$14,298,840.

"The number of establishments reporting for last year was 32, as compared with 22 for 1927, and the 32 manufacturers gave employment to 16,754 wage earners, to whom they paid \$26,172,322 in wages, representing increases of 48.5 per cent and 47.8 per cent, respectively, as compared with 11,

(Concluded on Page 4, Column 5)

The Christmas Spirit



Kelvinator's 1930 Profits Show 31 Per Cent Increase

Detroit, Mich.—Kelvinator Corporation, for the fiscal year ended September 30, 1930, reports net profit of \$1,601,016.37, after heavy charge-offs, an increase of 31 per cent in net profit over the previous year. Profit for 1930 is equal to \$1.35 per share on the 1,182,136 shares outstanding, compared with \$1.221,383.73 for the previous fiscal year, equal to \$1.02 per share on 1,179,859 shares then outstanding. Domestic refrigeration sales were reported as being 31 per cent over 1929.

President George W. Mason has issued the following statement: "The net profit of the corporation and its subsidiaries for the year ended September 30, 1930, after all charges, with inventories written down to reflect the low commodity prices at September 30, 1930, and to provide adequately for anticipated obsolescence, was \$1,601,016.37. This includes dividends declared out of the profits of Refrigeration Discount Corporation amounting to \$160,000.00, but does not include \$59,719.51 being our proportionate part of the earnings of Kelvinator of Canada, Ltd. There has been charged against operations for the

fiscal year all tool and die charges and experimental work, involving the expenditure of \$463,841.62, in addition to heavy expenses incident to the introduction to the public of the new Yukon line of Kelvinators and the new line of Leonard electric refrigerators.

"The balance sheet at September 30, 1930, reflects a sound financial condition with cash on hand in excess of all current liabilities. Working capital at September 30, 1930, was \$5,960,295.80, after the purchase during the year of \$925,000.00 of our Gold Notes and \$181,000.00 of First Mortgage Bonds of the Building Corporation, and the expenditure of \$736,673.24 on additional plant facilities, largely at Leonard.

"Net sales for the year aggregated \$21,450,896.46, which compared with net sales of \$21,947,343.85 for the previous fiscal year. It is worthy of comment, however, that while the sales of refrigeration for apartment houses dropped off substantially, and there was a material shrinkage in the sales of the ice boxes of the Leonard line, these shrinkages were made up by increases in the

(Concluded on Page 12, Column 4)

For the Home

THIS Christmas window, simple in design, helped to put G. E. refrigerators into numerous Omaha homes. It was arranged by the Storz Electrical Refrigeration Company of that city, and has been the subject of much favorable comment. The bears pleased the children, while their parents looked at the refrigerator.

COLONIAL LINES MARK NEW MAYFLOWER MODEL

Dayton, Ohio—With its Colonial design as its leading feature, the Mayflower electric refrigerator has been put on the market by the Trupar Manufacturing Company of this city. The new model is made in five sizes and is characterized by its simple but graceful lines. It is a self-contained unit, sold ready to be plugged in, and heavier insulation has been used than in previous models.

Current advertising of the new model points to the fact that in designing it an attempt has been made to get away from the "mere squareness of the old-fashioned ice box."

Trupar officials are enthusiastic about the new Mayflower, and are looking forward with confidence to increased sales in 1931.

DISTRIBUTORS INFORMED OF WESTINGHOUSE PLANS

Mansfield, Ohio—All distributors, old and new, of Westinghouse refrigerators, attended a one-day meeting, held at the Chamber of Commerce Hall, Mansfield, Ohio, to discuss 1931 national distribution, advertising and selling plans, Friday, December 12. Representatives of 20 cities were present.

T. C. Clifford, assistant manager of the Westinghouse refrigeration department, was chairman of the meeting, and introduced Carl D. Taylor, manager, as the first speaker. Mr. Taylor reviewed the history of Westinghouse refrigerators during its first year of existence, 1930, during which time distribution was limited to a carefully selected territory.

He then explained that, because of the general public acceptance within that territory, and the freedom from service troubles shown by the Westinghouse unit, Westinghouse will be distributed nationally during 1931 as far west as Kansas. Distributors and dealers are being appointed within the open territory as quickly as possible. Many new distributors were present at this meeting, some of whom have not yet completed their set-ups.

Mr. Taylor then reviewed Westinghouse plans for selling, distribution and advertising, during 1931, and the poten-

(Concluded on Page 16, Column 2)

COPELAND MEN TO MEET IN DETROIT, JAN. 12-13

Mt. Clemens, Mich.—The 6th Annual Copeland Dealers and Distributors Sales Convention will be held January 12-13, according to an announcement by W. D. McElhinney, vice-president in charge of sales. As for the last two years, the meetings will take place at the Players Club House, 3321 Jefferson Avenue, Detroit.

A most complete program has been planned in order to make the 1931 Copeland affair "bigger and better than ever." The list of speakers includes: W. R. Wilson, chairman of the board; Louis Ruthenburg, president and general manager; E. H. Brown, vice-president; C. W. Hadden, sales manager; R. M. Douglass, advertising manager; John R. Replogle, Edward Barger and E. Hughes, all factory officials.

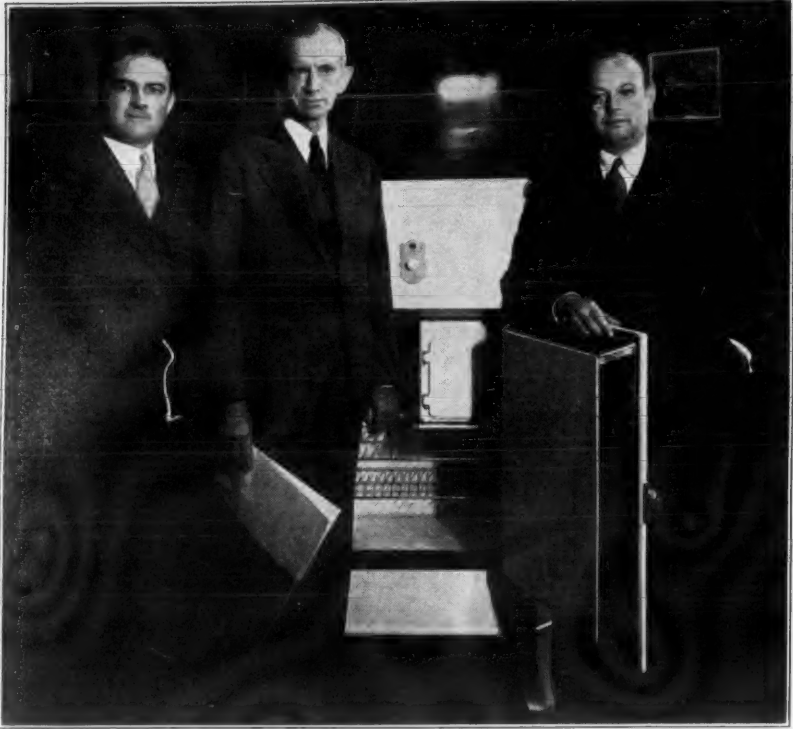
One of the main features of the Convention will be a "Copeland Show," with W. D. McElhinney as the "master of ceremonies." This will be a dramatization of the various sales points of the new Copeland line. Special scenery is being built and when the curtain goes up those in attendance will be in for a surprise. Following the showing of the new Copeland line there will be a discussion of plans for 1931.

In a preliminary announcement, Mr. McElhinney said:

"The new Copeland models will embody many entirely new and novel features, which will be of great interest to the whole electric refrigeration industry. In addition to the regular domestic, multiple and commercial units which Copeland now manufactures, there will be also a very extensive line of ice cream cabinets in all sizes."

According to present plans, the Convention will come to a close with a huge banquet on January 13th. It is estimated that some 600 to 700 Copeland distributors, dealers and salesmen will attend. While they are in Detroit for the Convention they will be the guests of the Copeland company.

Kelly Kicks In With Big Order For Majestic Refrigerators



Kelly Flanked by Young and Grunow

Chicago, Ill.—The Majestic Home Utilities Corp. has recently closed a deal involving a quarter of a million dollars' worth of merchandise with The Fair, huge Chicago department store. The three gentlemen pictured here appear well satisfied with their day's work, the

result of which was an order for twenty-five carloads of Majestic refrigerators. They are (left to right): H. E. Young, Majestic vice-president in charge of sales; D. F. Kelly, president of The Fair, and dynamic William C. Grunow, Majestic president.

SALESMEN STIMULATED BY DIRECT MAIL ATTACK

Portland, Ore.—At the end of August the Merchandising Department of the Pacific Power & Light Company was considerably behind in its quota on the three major load-building items—electric refrigerators, ranges and water heaters.

Some of the company's sixteen districts were fairly close to their quota, while others, scattered throughout the states of Oregon and Washington, had fallen so far behind that the continuation of efforts along the original plan left them an almost impossible job to reach their quota by the end of the year. It looked as though a new deal were necessary if the company was to get maximum results from all of the districts.

V. H. Moon, merchandise manager of the company, struck upon a new idea wherein an individual appeal would be made to each salesman. The idea consisted of assigning each salesman a personal quota, give him a personal quota book and promising a reward in the nature of an extended trip to those making their quota during the last months of the year.

The difference between the company's total sales at the end of August and the quota for the entire year constituted the basis of figuring the individual salesman's quota. These figures were divided by the number of active salesmen employed, leaving some margin for reverts and each man was assigned his individual share of the job.

The plan was essentially different from the regular assignment of quota in that the company took the privilege of assigning quotas to the individual men from the main office at Portland, Oregon, whereas normally all of the as-

signments were made through the district managers and quotas were fixed for districts rather than for individuals.

In order to build up interest in the new idea, five mailings were arranged to salesmen. These mailings consisted of five colored cards—one being sent each day for five days. Upon each card was imprinted the name of the salesman to whom it was addressed.

The first card explained that a new sales program which would require all of the salesman's energy and resourcefulness would be announced soon. The second card mailed the following day explained that the new plan would mean a lot of hard work but that it would be worth the job. Other cards were designed to impress upon the salesmen the importance of the forthcoming sales drive.

On the sixth day the salesmen received a night letter and by registered mail their personal quota book. Here, too, the salesman's name was imprinted on the individual quota book.

Moon personally signed the quota books and in each one wrote a personal note to each salesman, attempting to fit the note to the salesman's particular situation.

In the quota book were reproduced calendars for the last four months of the year. On the calendars were illustrations of ranges, General Electric refrigerators and water heaters, the number of such illustrations depending upon the personal quota of each salesman. For instance, in the case of one salesman for the month of November his personal quota was four ranges, three water heaters and two General Electric refrigerators. On the November calendar in this particular quota book would be found illustrations of four ranges, three water heaters and two refrigerators. As sales were made and reported, small stickers were sent to the salesmen from the main office so that he could place them on the calendar contained in his quota book.

A prize of \$2.00 on each range, refrigerator and water heater sold from September 1st to December 24th will be given. An additional \$10.00 special bonus will be given on the tenth sale; an additional \$20.00 special bonus on the twentieth sale; an additional \$50.00 special bonus on the thirty-sixth sale, and \$5.00 for each additional sale over thirty-six sales.

And another inducement for the salesmen to obtain their personal quotas is a special three-day trip offered to those who complete their personal quota by virtue of making thirty-six sales, providing that they have made their assigned quotas as shown in their personal quota book on two of the three items.

To the lucky quotateers will go the three-day trip, including an over-night stop in Seattle, a trip on one of the Canadian Pacific liners, up through Puget Sound, past the lovely San Juan Islands and on into the Gulf of Georgia, to Vancouver, B. C.

MANUFACTURERS OPPOSE CUMBERSOME REGULATIONS

New York, N. Y.—Opposition to the practice of requiring detailed working drawings with bids on electrical equipment or as an element of contract, was expressed in a resolution adopted November 21 by the Executive Committee of the National Electrical Manufacturers' Association.

The resolution is as follows:

WHEREAS: The practice of requiring detailed working drawings with bids or as an element of contract is objectionable and works a hardship on the manufacturer in that there is involved not merely unnecessary expense, but the demand for information and data which are the result of knowledge and experience, and are major elements of the bidder's "stock in trade," be it

RESOLVED: That the National Electrical Manufacturers' Association hereby records its formal opposition to the practice.

This opposition does not apply to such outline drawings of apparatus showing overall dimensions, assembly drawings of major components, wiring diagrams, performance data and other diagrams, charts, photographs and instructions as are needed for installation, operation and maintenance purposes.

GRAVES TO WORK WITH TAYLOR OF WESTINGHOUSE

Mansfield, Ohio—Clem B. Graves, formerly with the Standard House Utilities, Inc., is now with the Westinghouse Refrigeration Department as assistant to Carl D. Taylor, in charge of that department. Mr. Graves comes to Westinghouse with considerable experience, having for five years been Eastern sales manager of the Federal Electric Company, and ten years general sales manager of that company at Chicago. He directed the sales and distribution and resale of washers, cleaners, signal sirens, fuses and signs.

During 1927 and 1928 he organized and directed the marketing of gas ranges for the Detroit Vapor Stove Company. In 1929 and 1930 he organized and directed the operation of The Standard Home Utilities, Inc., a national chain of household appliance stores selling only nationally advertised products.

ALTHOUSE WITH MAJESTIC

Cincinnati, Ohio—E. A. Althouse, of Milwaukee, who was formerly with the Lindsay Automatic Refrigerator Company, has been added to the staff of the refrigeration department, Majestic Distributing Company of Cincinnati.

SEALED SLABS that fit snug!



made especially for Mechanical Refrigerators

Efficient insulation . . . factory-made into slabs to your own measurements . . . possessing all the advantages of both rigid and flexible types . . .

. . . Balsam-Wool Sealed Slabs! Ideal insulation for mechanical refrigerators.

They are built up to required thickness with layers of Balsam-Wool Blanket—positive assurance that each is completely filled with a permanent, non-settling, highly efficient insulation.

They fit snug—flexible enough to make joints that are really tight, yet rigid enough for easy handling. They go into place quickly.

Save labor! And once there, they stay in place, firm, tight, efficient!

Carefully sealed against moisture. Permanent, light weight, sanitary, vermin-proof, odorless. They meet squarely the most exacting engineering standards for true insulation.

Their thermal conductivity does not average over .25 B. t. u. per square foot, per hour, per one inch thickness, per one degree Fahrenheit difference in temperature.

We will send free for your examination one of the perfected Balsam-Wool Sealed Slabs. Simply write our nearest sales office—today.

WOOD CONVERSION COMPANY

Mills at Cloquet, Minnesota

Industrial Sales Offices

Chicago, 360 No. Michigan Ave.

New York, 3107 Chanin Bldg.

Detroit, 3084 West Grand Blvd.

Manufacturers of Balsam-Wool Insulation for Domestic Refrigerators, Motor Buses and Airplanes; Balsam-Wool Refrigerator Car Insulation and Steel Passenger Car Insulation; Balsam-Wool Standard Building Insulation and Nu-Wood Insulating Board; Balsam-Wool Acoustical Blanket

Frigidaire Footballers

Dayton, Ohio.—Taking advantage of the average American man's interest in football, Frigidaire Corp. is nearing the close of a nation-wide sales contest, based entirely upon the college game.

Every salesman in the organization participated in this new kind of football game, with every district having a varsity team. Games were scheduled between teams within each of the seven conferences, and the wind-up of the season, December 27, will be climaxed by selection of All-American teams, all-conference and all-district teams. Trophies and letter-awards will go to winners.

Games were divided into quarters, with each week representing a quarter, and each month a game. There were three games to determine conference standings and final winners.

For the purposes of the contest, each sales region became a conference, and each district a team. Mr. Harlan is chief coach. The National Board of Strategy is composed of Chief Coach Harlan, Sales Manager H. C. Jamerson,

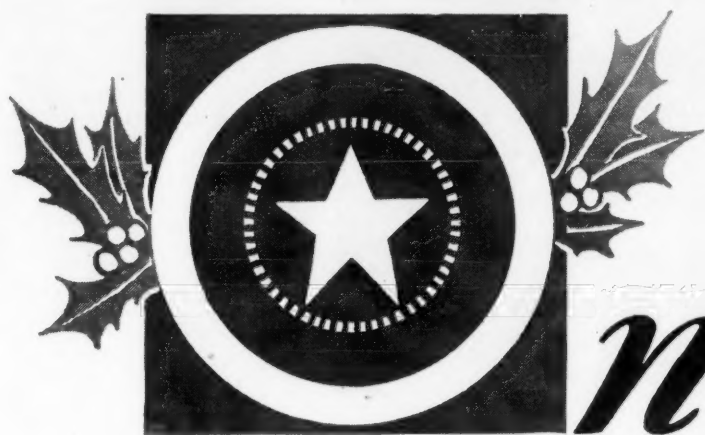
Assistant General Sales Manager C. A. Copp, and Commercial Sales Manager B. J. Vandoren. Regional managers served as referees for all games in their districts. Distributors and branch managers served as field judges, sales managers become umpires, and supervisors are captains of squads working under them.

The eleven high men for the period of the contest in each district will be the all-district team, and will receive individual football trophies.

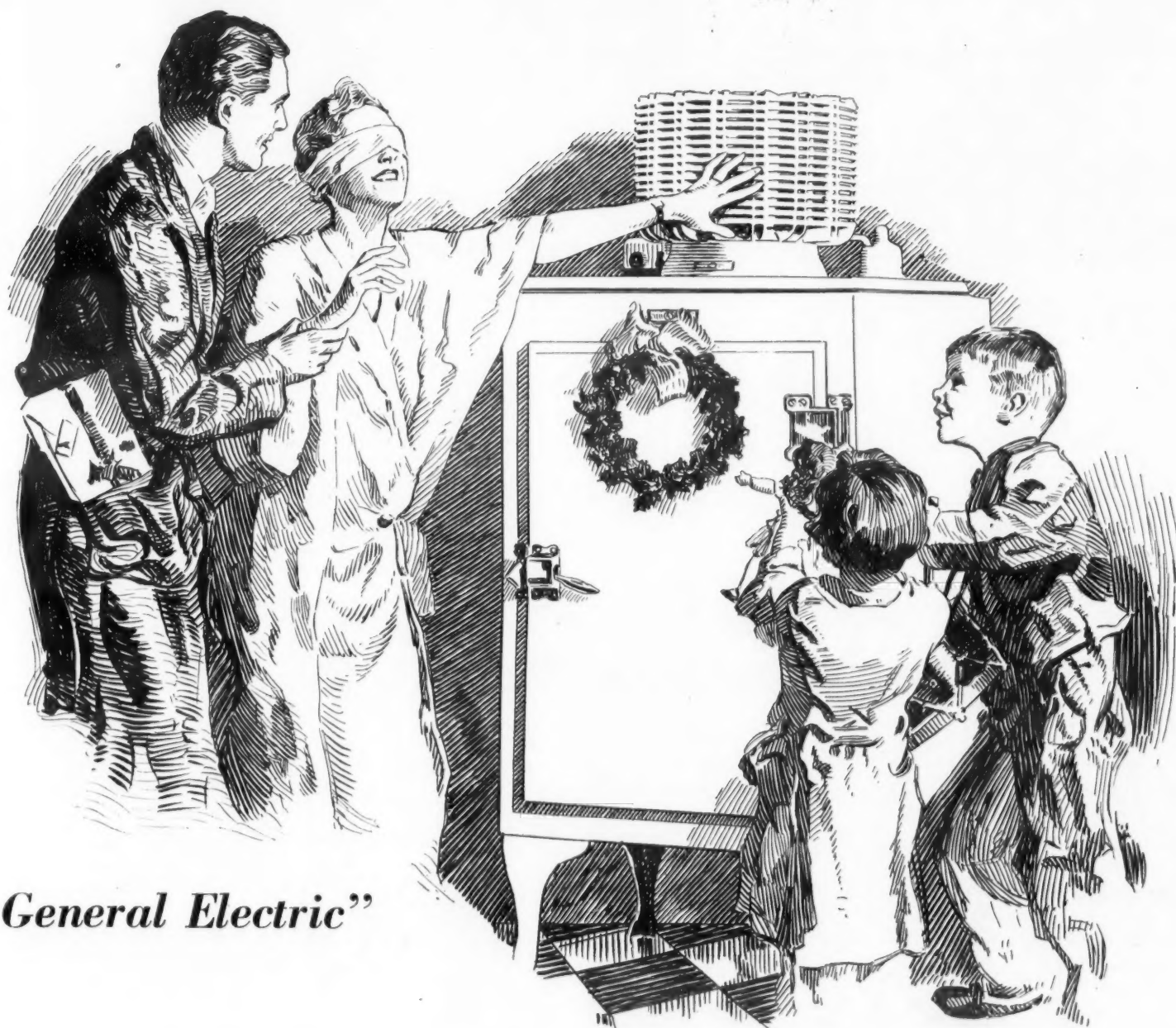
The eleven high men for the period of the contest in each region will be known as the all-conference team, and will be awarded individual trophies by the regional manager.

The eleven high men in the United States will constitute the All-American team, and each man will receive a trophy from the vice-president in charge of sales. Each man who sells his quota during the period of the contest will be a Frigidaire Letter Man, and will receive a championship football medal pocket piece properly inscribed.

Rough Riders from Dayton



the week of WONDERFUL SALES OPPORTUNITY



"It's a General Electric"

ONE week left and Millions of husbands still perplexed with the perennial question, "What to give her for Christmas?"

The amazing public recognition and acceptance enjoyed by the General Electric Refrigerator is admirably expressed by the above picture and its title, "It's a General Electric." Blindfolded, she joyfully recognizes it by the distinctive Monitor Top. The merchandising value of this recognition is inestimable.

The idea, "It's a General Electric" has been spread throughout the land on Millions upon Millions of magazine and newspaper pages, outdoor posters, direct mail pieces, radio broadcasts and window displays.

The huge profit possibilities of this week justify extra activity. Double and redouble your efforts in a whirlwind finish down the stretch to Christmas profits.

GENERAL ELECTRIC ALL-STEEL REFRIGERATOR

ELECTRIC WATER COOLERS

COMMERCIAL REFRIGERATORS

ELECTRIC MILK COOLERS

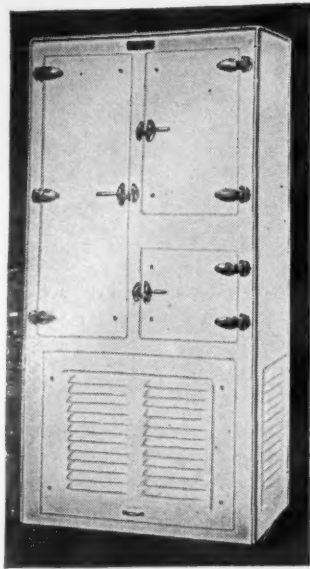
ELECTRIC REFRIGERATION DEPARTMENT

GENERAL ELECTRIC COMPANY

HANNA BUILDING, 1400 EUCLID AVENUE, CLEVELAND, OHIO



"It was built by BOHN"



The handy base cabinet may either be used for refrigerating machinery or the storage of cooking utensils, canned goods, vegetables, etc.

The name BOHN is our warranty that the finest materials obtainable have been utilized by skilled craftsman and refrigeration engineers to build for you this beautiful and scientific product—an all-porcelain BOHN refrigerator.

BOHN installations include many of the leading hotels, restaurants and hospitals in America.

BOHN refrigerators are used exclusively on all Pullman-built railway dining and buffet cars.

The United States War Department has purchased hundreds of all-porcelain BOHN refrigerators for our army barracks and battalions.

In choosing BOHN refrigerators, discriminating home owners throughout the country have given BOHN a representative list of which any manufacturer might be proud.

Write for details of the remarkably low prices that are now prevailing.

BOHN REFRIGERATOR COMPANY
SAINT PAUL, MINNESOTA

Baer at Helm of A. S. R. E.



A. H. Baer

Paul Petersen, who is a pioneer in quick freezing, and in talking of food freezing temperatures frankly acknowledged that there were many questions still unanswered; and Professor Arthur W. El-

(Concluded from Page 1, Column 1)

well, of Worcester Polytechnic Institute, whose subject was "Ozone and Cold Storage Foods." President Edwards was in the chair. Both Professor Woolrich and Mr. Petersen joined in a preference for the term "freezing ranges," instead of "freezing points," when discussing the freezing of foodstuffs. They pointed out that in a piece of meat, for example, different constituents freeze at different temperatures, and that in speaking of the whole piece, "freezing range" is the most nearly accurate term.

The second session on Thursday morning, with Harry Harrison of the Research Committee presiding, was devoted to the student prize papers, preceded by an address on the young engineer in industry by Dr. A. R. Stevenson, Jr., of the General Electric Company. The students who read papers were A. R. Fayed, Purdue; John C. Reed and Edgar A. Ambrosius, Illinois; Joseph J. Simpson, Villa Nova, and Aubrey L. Smith, Tennessee. The two young men from Illinois, Messrs. Reed and Ambrosius, presented some interesting studies of the volumetric efficiency of vertical single acting ammonia compressors. Some of their conclusions differed considerably from those reached in the past, and therefore caused an animated discussion.

Refrigeration Applications

A. H. Baer was in the chair on Thursday afternoon, and the main topic was Refrigeration Applications. The papers read were by J. M. Wadsworth, manager of the Independent Oil and Gas Co., of Tulsa, Okla., on oil refinery refrigeration; R. C. Jessup, of the U. S. Bureau of Standards, on frozen brine; Milton W. Browne, of Kansas City, Mo., on cold storage humidity; C. O. Deuvel, Jr., of the American Thermos Bottle Company, Norwich, Conn., on the manufacture of carbon dioxide ice, and G. A. Wegener, of the Wegener Engineering Co., Rochester, N. Y., on the design of float valves.

The discussion of frozen brine evoked by Mr. Jessup's paper proved extremely interesting, and even overflowed into the small sessions held for other purposes in various rooms long after the regular meeting had ended.

Machinery, commercial and domestic, was the general subject at the Friday morning session. Professor Arthur J. Wood, of Pennsylvania State College, and former president of the A. S. R. E., presided. On the program were: D. F. Keith, of the Perfection Stove Co., Cleveland, whose subject was "The Intermittent Absorption Machine"; H. R. Van Deventer, engineer and patent attorney of New York, who spoke on the patent situation, covering enclosed motor compressors; John Wyllie, Jr., Kelvinator, Detroit, who discussed the commercial machine test code now before the Society, and L. A. Philipp and R. H. Swart, both of the Kelvinator Corporation, Detroit, who reviewed their work on the determination of evaporator capacity.

The discussion of the commercial ma-

chine test code by Mr. Wyllie was listened to with extreme interest because of the author's record in the field and the fact that commercial refrigeration is a constantly increasing factor in the business of those companies which have hitherto gained their greatest fame in the domestic field.

In the afternoon the A. S. R. E. moved its meeting place to 29 West 39th Street, where a joint session was held with the American Society of Mechanical Engineers. Willis H. Carrier, formerly president of the A. S. R. E., was chairman, and the first paper, "Psychrometry—

Effect of Conditioning on Familiar Products," was read by D. C. Lindsay, of the Carrier Corporation, Newark, N. J. The second speaker was Professor Woolrich, who spoke on "The Effect of Humidity on Heat Transmission of Black and Galvanized Pipe."

The final session on Saturday morning found Glenn Muffly, first vice-president of the A. S. R. E., in the chair. There were four papers: "Heat Transfer in Refrigerators," by M. R. Van Dusen and J. L. Finck, of the Bureau of Standards, Washington; "Thermal Testing—Refrigerator Cabinets," by H. W. Eagles, General Electrical Company, Schenectady; "Testing Ice Refrigerators with the A. S. R. E. and A. S. A. Codes," by C. R. Coe, of the Electrical Testing Laboratories, New York, and "Improvement of Refrigerator Manufacture," by Gale T. Pearce, sales manager, Dry Zero Corporation, Chicago.

The paper read by the two government experts attracted keen attention, as there has been much curiosity about the refrigeration work that has been under way at the Bureau of Standards. Mr. Pearce, in his position as dispenser of insulation to a number of cabinet manufacturers, has had an opportunity to gain valuable information in regard to the subject matter of his paper, and he pointed out a number of distinct forward steps that have been taken recently in the manufacture of refrigerator cabinets, as well as predicting further improvements in the near future.

The social end of the Convention proved fully as successful as the business session. President Edwards and President-elect Baer kept open house for the members in their lofty suite with its balcony overlooking the city, and on Wednesday afternoon Mrs. Edwards, Mrs. Baer and Mrs. Muffly served tea there. The big party on Friday evening was enjoyed by all who attended. The big ballroom was filled and the entertainment which followed the dinner, and which was over in time for an hour or two more of dancing, was excellent. The entertainments were in charge of a committee headed by Mr. Oakley.

SEEGER QUASHES RUMOR; WILL STICK TO CABINETS

St. Paul, Minn.—The Seeger Refrigerator Company is not going to manufacture refrigerating units but intends to stick to the cabinet business. That was made clear by Walter Seeger, vice-president, when asked in regard to the truth of a persistent rumor that has been making the rounds of the refrigerating industry.

In addition to denying that his company intends to make refrigerating units, Mr. Seeger added that "we are continuing manufacture of refrigerator cabinets for electrical machines which are manufactured by a great many others, and the manufacturing of these cabinets covers cabinets for the apartments, homes, hospitals, hotels, institutions of all kinds."

U. S. CENSUS FIGURES SHOW PROGRESS OF INDUSTRY

(Concluded from Page 1, Column 5)

285 wage earners and \$17,712,006 in wages in 1927.

"Materials, fuel and electric current purchased last year totaled \$71,786,912, as against \$42,651,262 for the previous census year, an increase of 68.3 per cent, and the value added by manufacture (value of products less cost of materials, fuel and purchased electric current) amounted to \$89,707,507, compared with \$53,862,387 in the earlier year, an increase of 66.5 per cent.

"In addition to mechanical refrigerators, the 32 manufacturers produced other commodities valued at \$14,484,832, which represents an increase of 132.1 per cent, as compared with \$6,240,895 worth of secondary products produced in 1927."

TRUPAR ANNOUNCES



PERIOD DESIGN IN AN ELECTRIC REFRIGERATOR



1931 MAYFLOWER OFFERS ENTIRELY NEW SALES FEATURE . . .

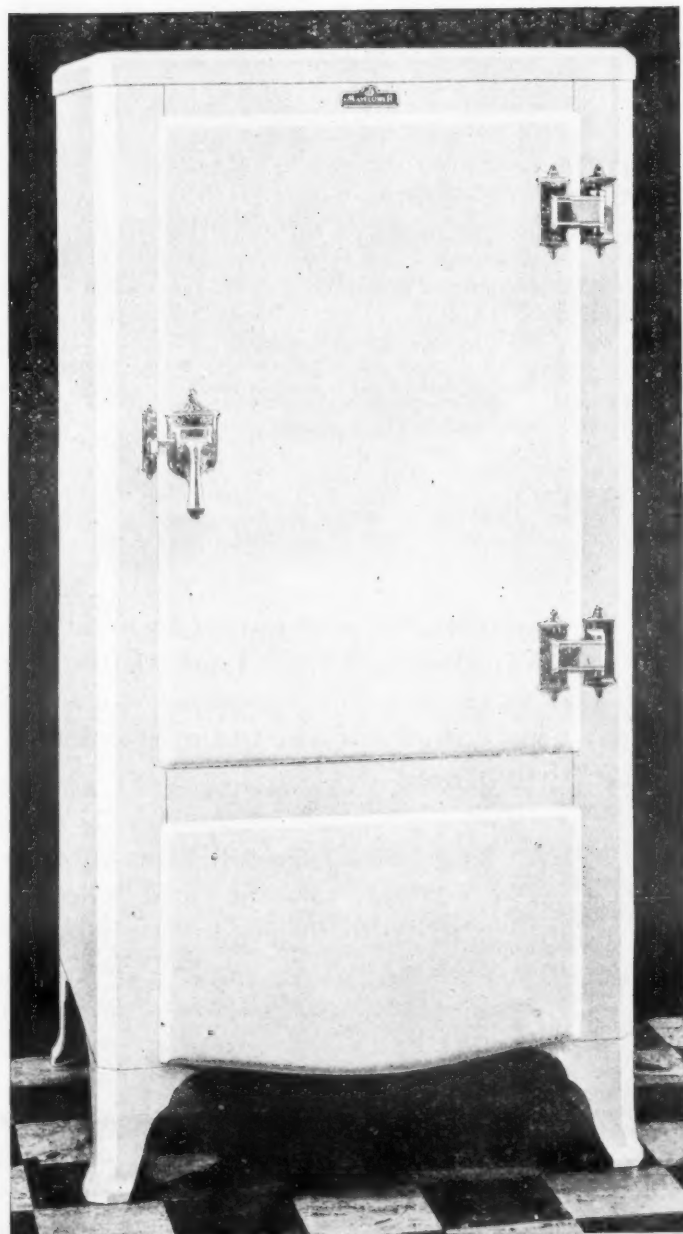
Startling new beauty, inspired by the simple charm of the early Colonial, gives the 1931 Mayflower an entirely new sales feature.

For here, at last, is authoritative beauty that the housewife instantly recognizes, — and wants! She wants it because she knows it is styled in good taste—because it suggests colonial grace and dignity instead of the mere squareness of the old-fashioned ice box.

Just as Trupar has pioneered lower priced electric refrigeration in years past, the Mayflower now pioneers new and distinctive beauty. Wholesale houses, jobbers, and dealers everywhere who have found the Mayflower an exceedingly profitable dealer proposition in the past will welcome this new, better Mayflower with its powerful sales appeal.

It will mean to them, and it will mean to you, as a Mayflower dealer, a year of more business and greater profits. Ten years' engineering experience assures you a reliable, dependable product. Lower prices, greater beauty, and outstanding value get the business for you. Write today for full particulars of liberal dealer proposition.

The new MAYFLOWER is made in five models—four, five, and six cubic foot standard models, and a seven and nine De Luxe Model. Lacquer-Porcelain and all-Porcelain finish.



The Mayflower's other outstanding sales features

1. Completely self contained—ready to plug in.
2. Factory tested—to insure trouble-free operation.
3. Unusually quiet and vibration-free compressor.
4. Amazingly economical operation.
5. Heavier insulation.
6. Visible, easily accessible temperature control.

Testing Service for Domestic and Commercial Electrical Refrigeration

Testing and experimental laboratory service for Manufacturer, Distributor, Central Station. Test data exclusive property of client.



**Electrical Testing
Laboratories**

811th St. & East End Ave.
NEW YORK

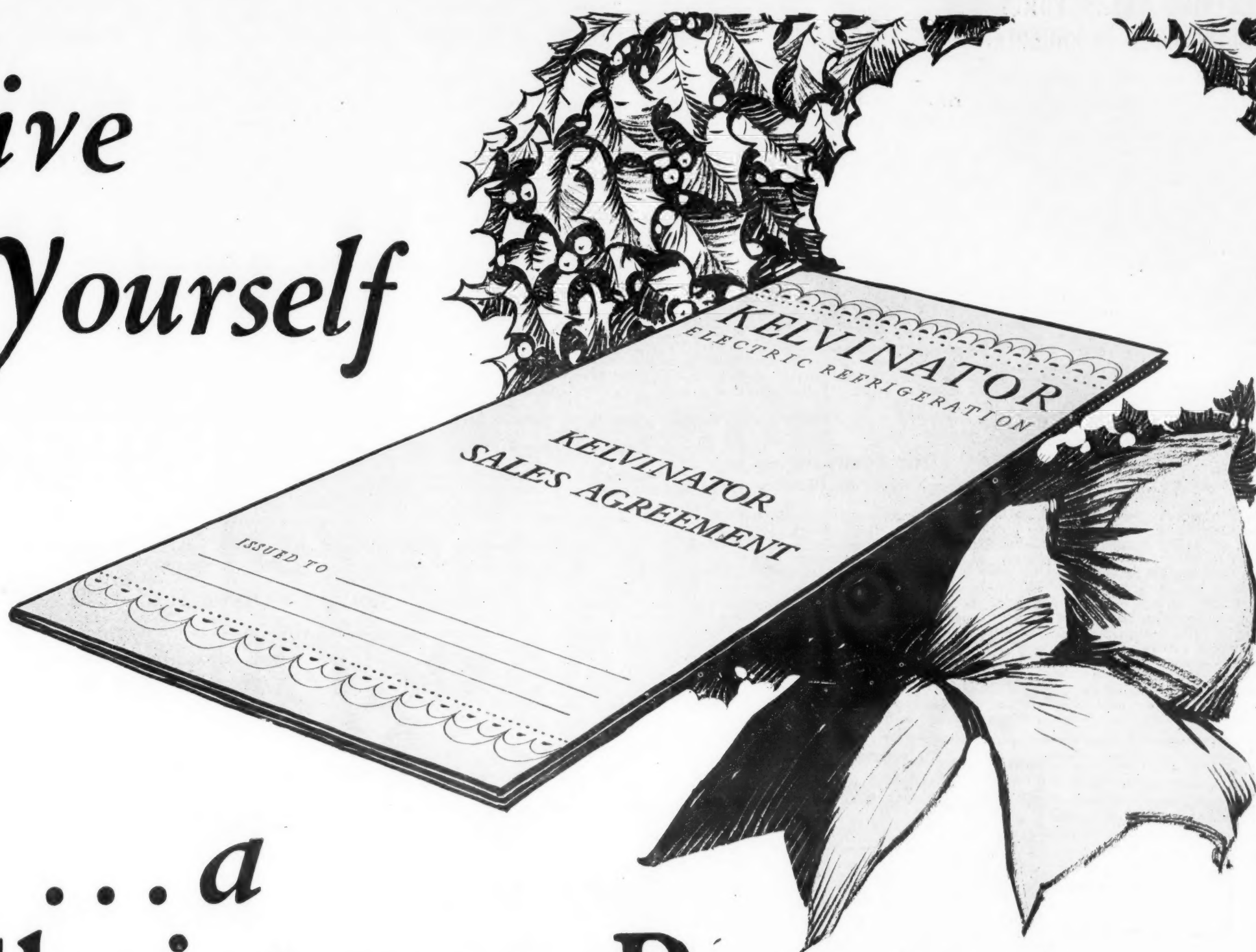
REFRIGERATION RUBBER WARE

Manufacturers of molded insulation for commercial and domestic refrigerator cabinets. Materials and parts developed to meet the exacting requirements of refrigeration efficiency.

THE AETNA RUBBER CO.
ASHTABULA, OHIO

« **Trupar** »
MANUFACTURING CO.
DAYTON, OHIO U.S.A.

Give Yourself



... a Christmas Present

Only one more week until Christmas. Then another week, and 1930 will be history. Perhaps 1930 has been kind to you. Perhaps you have a line of merchandise that has been profitable for you—a line that has paid you for your efforts and showed a satisfactory return on capital invested. If so, we congratulate you, and wish you even greater success in 1931.

If, on the other hand, the going has been hard; if the merchandise you handle is slow-moving, behind-the-times, a poor profit-producer; we would like to suggest that you investigate the Kelvinator Line for 1931, the Kelvinator Franchise, and the 17 year old organization behind the

franchise. Perhaps it is just the opportunity you have been looking for. Kelvinator *is*, we believe, the most desirable franchise in the industry today, and we would like to show you and tell you why.

Why not "give yourself a Christmas present"? A Kelvinator Dealership is the best gift you can choose for yourself, and one that will increase in value with every passing year.

Kelvinator Corporation, 14245 Plymouth Rd., Detroit, Mich.

Kelvinator of Canada, Limited, London, Ontario

Kelvinator Limited, London, England

KELVINATOR

KELVINATOR CORPORATION,
14245 Plymouth Road, Detroit, Michigan.

Gentlemen:

I would like to have complete information about the Kelvinator Franchise.

Name _____

Street Address _____

City _____

State _____

(173)

FEMININE SALES FORCE MAKING GOOD IN PHOENIX

Phoenix, Ariz.—Electric refrigeration has been made an important feature in the operations of the Valley Plumbing and Sheet Metal Works, Phoenix, Ariz., representatives for Holbrook refrigerators and Torrid Zone furnaces. Plumbing equipment has been relegated to a minor position to make room for the refrigerators.

The Valley Company has been operating for 12 years and has just completed a new plant for its expanding operations. The new sales room has an art-stone front and a beautifully decorated interior. The shop in the rear occupies 7,000 square feet of floor space and employs ten men. W. J. Stoneham, founder and general manager of the company, personally supervises the refrigeration department.

"The hot summers in this desert country make this a good field for the sale of refrigeration systems in connection with the installation of ventilation equipment," says Mr. Stoneham, "and a good line of electric refrigerators for domestic use in the preservation of foods is the natural accompaniment of such business."

Mr. Stoneham engages women only in the refrigeration department, maintaining the position of sales manager himself, but relying entirely on his feminine force in making the direct merchandising contacts. He trains them with this special end in view.

"I find," he explains, "that in making the contacts with the men of the community in my sales of ventilation and heating equipment, I naturally open the way to a great many contacts with the women of the district who are personally interested in home refrigeration. It is a good working plan in such a case to have a trained woman who can follow

up that lead. I believe women can talk better with women on this particular matter of food preservation and the preparation of frozen desserts and the general effect of refrigeration on the entire social side of home economy."

HARD WORKING ISRAEL SETS SALES RECORD

Nassau, N. Y.—A. Israel, salesman for the Long Island Lighting Company of Nassau, viewed the business depression with no alarm. He redoubled efforts, pushed door bells, saw prospects and worked nights. On November 1 he had sold more than 300 Frigidaires this year, had set up a record of 189 Frigidaires in 149 working days, of which only one order for 14 units represented quantity business.

No high-powered salesman is Abe, as his fellow-salesmen know him. He uses a visible file system for keeping track of prospects, knows every family in his territory of 4,500 electric meters. Every morning he canvasses, every afternoon he takes prospects to the showroom, every evening he gets orders signed. Seventy-five per cent of his sales are made at night.

LUTZ COMPANY HAS RENTAL PLAN

Dayton, Ohio.—F. P. Lutz Company, Dayton and Miami Valley distributors for Electric refrigerators, has announced an unusual Christmas offer. For as low as five dollars per month the new General Electric refrigerator may be rented. Rental fee may be applied on the purchase price of the unit, if the renter decides to purchase the refrigerator, Mr. Lutz announced. Persons renting a G. E. unit will not be obligated to buy.

Renters have the privilege of buying at or before the expiration of four months, receiving full credit on the purchase price for all rentals paid.

GAS REFRIGERATOR SALES SUBJECT OF A. G. A. REPORT

INTERESTING data on retail sales of gas refrigerators has been gathered from twenty companies by the American Gas Association. Methods of selling, compensation of salesmen, trade-in allowances, down payments, advertising and dealer co-operation are taken up by the Subcommittee on Retail Sales. C. V. DeWees, of Philadelphia, is chairman. The report is as follows:

Approximately one-half of the refrigerator sales reported were sales made by specialty refrigerator salesmen, and the remainder were those of regular appliance salesmen. From the data given by the twenty companies interviewed, it is interesting to note that the specialty salesmen averaged almost 100 refrigerators per man annually, whereas the regular appliance salesmen averaged 12 refrigerators each during the year.

The trend toward greater use of specialty refrigerator salesmen is a logical one, due to the fact that the refrigeration field is highly competitive. It appears essential if the gas industry is to promote gas refrigeration at a rapid rate.

Fifteen companies reported that each salesman is assigned to and protected in a definite territory. Twelve companies required each salesman to fulfill a definite quota for continued employment. All but two companies offer their employees some inducement for productive leads, these inducements varying from \$1.00 to \$5.00. Only four companies offered inducements to customers for leads. The committee feels that more companies should adopt this method of obtaining productive leads.

There were 209 showrooms reported by 20 companies as being utilized in the sale of gas refrigeration, of which only 21 were kept open evenings. Some provision should be made by the majority

of gas companies for the public to view gas refrigerators, either in the main branch store nightly, or in other branches.

About one-third of the companies reporting have followed the practice of making some allowance for old refrigerators, this allowance varying from a minimum of \$3.00 to \$25.00. While this practice appears necessary in some locations because of the competitive situation, it is the opinion of the committee that it will be gradually discontinued.

Ten per cent seems to be the favorite figure for down payment, although some companies report no down payment and the balance over a period of up to two years. The trend has been definitely to longer terms, as indicated by the fact that 40 per cent of the companies offer 24 months, and an equal number offer 18 months, the balance ranging from 12 to 17 months.

If any evidence were needed to prove that the gas industry intends to aggressively promote retail gas refrigeration, it is proved by the \$300,000 advertising appropriations of these 20 companies for the year 1930. The following advertising mediums were listed as giving the best results: 1. Local newspapers; 2. Circular letters; 3. Stuffers with bills.

Fourteen of the reporting companies had in operation a plan of plumber-dealer co-operation, and the majority of these companies reported success from their co-operative activities. Dealer sales amounted to 12 per cent of the total refrigerators sold by those companies which had dealer co-operation.

GOLFING MAJESTICALLY

Greenwich, Conn.—The owners of the Greenwich Indoor Golf Course know how to stimulate business. They offered a Majestic electric refrigerator as a prize. The refrigerator was a good drawing card and crowds played the pony course.

FRIGIDAIRE IN PORTLAND BREAKING SALES MARKS

Portland, Me.—Installations of Frigidaires in November were 60 per cent ahead of installations during the same month last year, while installations during October ran 20 per cent ahead of those of October, 1929, according to William B. Ward, manager of the Portland branch of the Frigidaire Sales Corporation of New England. Sales of commercial equipment during these months have been very good.

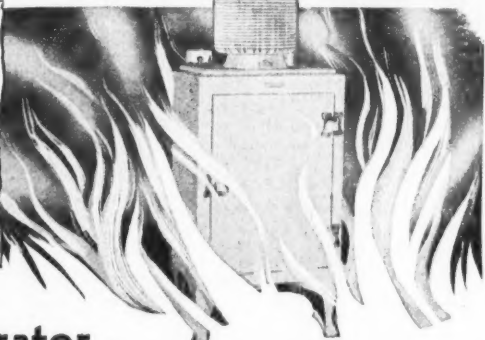
Two farms were equipped with milk-cooling equipment this fall. A direct expansion tank type cooler, with a capacity of 12 cans, was installed at the farm of Dr. E. W. Files at Gorham, and a Nagle direct expansion cooler, six-can capacity, was installed for George Atherton of Windham.

In the first Atlantic and Pacific Co. store in Maine to adopt the black and white color scheme in place of the conventional red, a store on Congress Street, Portland, Frigidaire placed a K compressor, 74F coil and 75F coil to cool a new type display cabinet. A C compressor, three 57 OF coils and one 78F coil were installed in an A. & P. store on Forest Avenue, Portland, and a C compressor, one 78F coil and three 96F coils were placed in a store at Brunswick.

With the installation of an AP12 biological cabinet, and a T200 water cooler with YO compressor, in the drug store of H. H. Hay and Sons, Middle Street, Portland, the total number of Frigidaire jobs in this store was brought to five.

Other installations announced were: One Seeger 7-foot cabinet with six TF coils, YO compressor and T200 water cooler in Potter's Restaurant, Congress Street, and one R compressor with an 1866F coil and T200 water cooler in Baker's Restaurant, St. John Street, both in Portland.

"When the first fire alarm was turned in at 9:30 Wednesday night, there were 30 pounds of ice in this all-steel, General Electric refrigerator. At 11:30 p. m. electric current was shut off. At 8:30 yesterday morning—nine hours later—the burned and blistered cabinet was opened and the ice found intact."



G. E. Refrigerator Insulated with INSULITE WITHSTANDS RAGING FIRE and Retains Ice

THE other day in Columbus, Ohio, a fierce fire swept the sales rooms of Bard-Barger, Inc., distributors of General Electric Refrigerators. In a recent letter from these distributors, we are informed that the General Electric Refrigerator pictured above and insulated with Insulite, was in the heart of the blazing fire for over four hours. The cabinet was blistered and buckled—but when opened, nine hours after the current had been cut off, the interior was undamaged and still cold—the ice unmelted. Can you imagine more convincing proof of the efficiency and durability of Insulite insulation!

Insulite is made from the clean, tough fibers of northern woods, chemically treated to resist moisture, and will not rot, mold or disintegrate during the entire life of the cabinet.

In addition to its high insulating efficiency, Insulite combines all the other necessary qualifications for correct cabinet insulation—continuous durability, sturdiness, lightness—it is odorless and will not absorb odors. Insulite is furnished cut to size, ready for installation, thereby reducing labor costs and material waste and speeding up production.

If you are not already using Insulite in your cabinets, may we send you further proof of the many advantages of this all wood-fiber insulating board that reduces costs, and speeds up production. Just mail the coupon for sample and additional information.

FILL OUT AND MAIL THIS COUPON

THE INSULITE CO.
(A Backus-Brooks Industry)
1200 Bulfinch Exchange, Dept. 30L
Minneapolis, Minnesota
Offices in All Principal Cities

Please send me your folder on Refrigerator Insulation and also a sample of Insulite.

Name.....
Address.....
City..... State.....

BARD-BARGER, INC.

GENERAL ELECTRIC
Refrigerator
118 EAST BROAD STREET
COLUMBUS, OHIO

September 17, 1930

The Insulite Co.,
Minneapolis, Minnesota

Attention: Mr. H. R. Strobusch

Dear Mr. Strobusch:

In reply to your letter of September 15th in regard to the fire which we had the night of June 15th, please be advised that twenty refrigerators went through this fire. One of them was in our rear basement, was practically in the heart of the fire, which burned for over four hours, and later was submerged in eight feet of water for another thirty-six hours. This refrigerator when finally dropped out, with the addition only of a new attachment cord, refrigerated perfectly. The outside of the cabinet was somewhat blistered but the interior was unharmed.

We are attaching a copy of an advertisement which we ran in our local paper the day following.

Trusting that this information will be of interest to you, I am

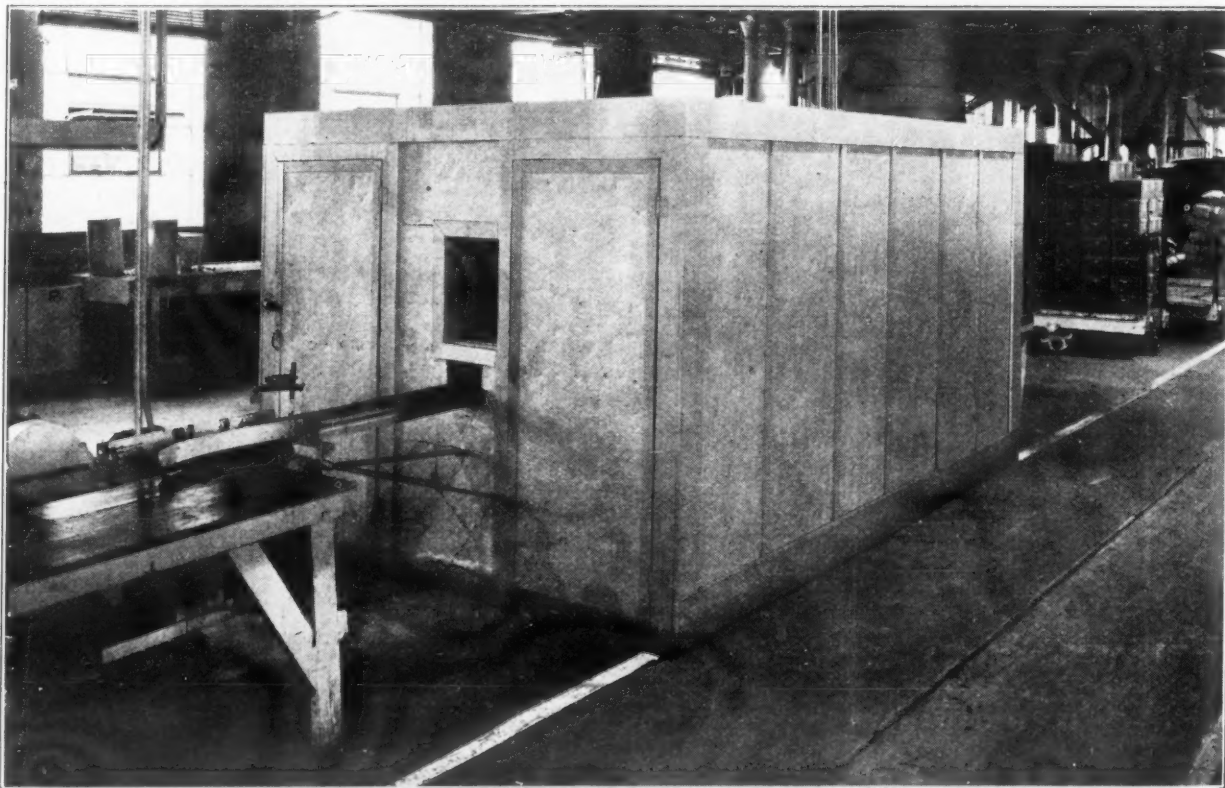
Very truly yours,

BARD & BARGER, Inc.

By Dr. Bard

THIS REFRIGERATOR
WAS INSULATED
WITH INSULITE

Frigidairing the Peanut



(Above) Cool room where peanut bars and clusters are wrapped at the big Huston plant in Columbus. The Frigidaire does away with the peanut's two worries, heat and high humidity.

Columbus, Ga.—Electric refrigeration, in the form of a Frigidaire room cooler, plays an important part in assuring the same even quality of crispness in every shipment of peanuts that leaves the big plant of the Tom Huston Peanut Co.

An insulated room, well protected against outside heat and humidity, houses an intricate machine which

wraps and seals transparent paper around peanut bars and clusters. Until this room, with its Frigidaire room cooler, was fitted up, high humidity and hot weather caused shut-downs in the candy department. Now all-year protection can be maintained to keep pace with the ever-growing demand for "Tom's" products.

Absopure ELECTRIC FRIGERATOR

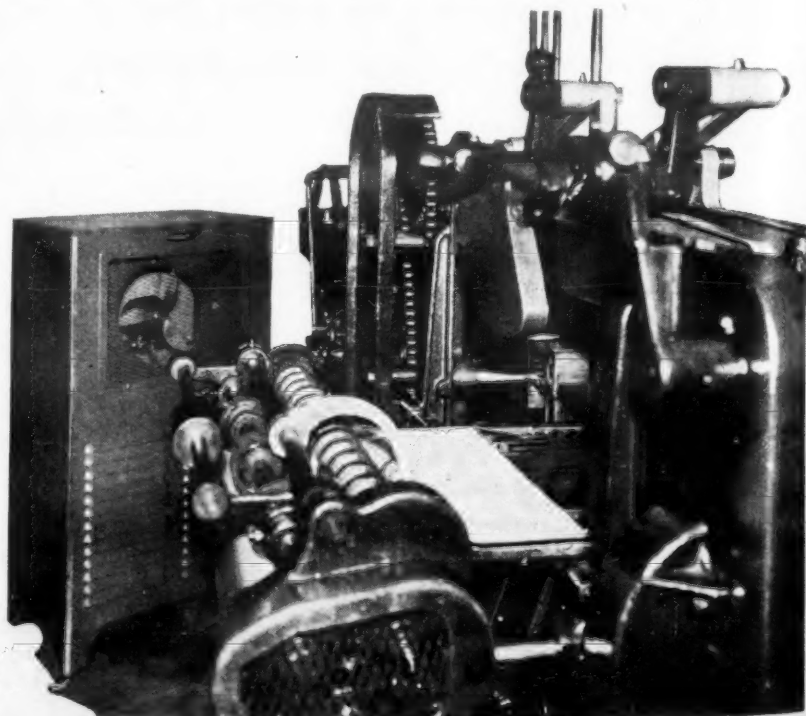
12 HOUSEHOLD MODELS

All porcelain and porcelain-lined. From 4.3 to 32 cu. feet capacity.

COMPLETE COMMERCIAL LINE For Meat Markets, Grocers, Florists, Apartment House Multiple.

THE Absopure franchise is an asset whose value will increase as refrigeration comes into its own. Some territory is still open. For details—write or wire the factory.

Absopure
Refrigeration Corporation
1560 Theodore Street
DETROIT - MICHIGAN



One Cools, the Other Wraps



The
DRY - ZERO
Corporation
wishes each individual
in the great electric
refrigeration industry



A MERRY CHRISTMAS
and a
PROSPEROUS NEW YEAR



DRY-ZERO CORPORATION, MERCHANDISE MART, CHICAGO, ILLINOIS

DRY • ZERO

THE MOST EFFICIENT COMMERCIAL INSULANT KNOWN



ELECTRIC REFRIGERATION NEWS

The Business Newspaper of the Refrigeration Industry

Published Every Two Weeks by

BUSINESS NEWS PUBLISHING CO.

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December 17, 1930

The Rumor Factories

MODERN industry for some reason or other seems to be a breeding place for rumors. In late years the fierce white light which the poet wrote about has been supplemented by x-ray attachments that render the actions of those in high places about as conspicuously public as a man emerging from his Pullman berth in the middle of the morning, and the rumors have fled to the field of industry. There they have found plenty to feed upon and hosts of willing tongues to encourage them to live long and flourish.

The electric refrigeration industry is like all the others, possibly more so. At times it seems as though it turned out more rumors than refrigerators. Some of them, of course, gradually change character, lose their air of irresponsibility, and settle down in the industry as sober, solid facts, but most of them are here today and gone tomorrow, leaving behind little but the injured feelings of those who were foolish enough to believe in them.

What is ELECTRIC REFRIGERATION NEWS to do with all these rumors? Various methods of dealing with them have been suggested. If it were possible to obtain either a flat confirmation or a flat denial from those whom each rumor concerns, the problem would be simple. But that often is impracticable, particularly in the case of the man who has a new model or even a new product in view and quite justifiably doesn't want it talked about until he has set the stage, greased his channels of distribution, and is all ready for the big jump into the public gaze. He doesn't want his plans upset by premature publicity, and can't be blamed for feeling that way about it.

Then there is the sort of rumor that is easy to catch. That is the one which says that a man or a manufacturer is going to do something that he actually has no intention of doing. Such a rumor came to light recently. It was to the effect that the Seeger Manufacturing Company intended to manufacture refrigerating units, place them in Seeger cabinets, and sell complete mechanical refrigerators. Walter Seeger, vice-president of the company, was more than willing to deny this rumor. As a matter of fact, he was anxious to do so, for he didn't want his best customers to think that he was planning to compete with them. That rumor should be considered officially dead.

Those are the two principal kinds of rumors that trouble the NEWS and keep the industry uncomfortable. Dealing with them is a real problem. The NEWS has pursued a policy of refusing to print rumors until their truth could be ascertained one way or the other. Maintenance of this policy in the year just ending, when rumors in regard to the Majestic refrigerator were flying thick and fast, made it necessary to ignore much "information" that was current in the industry. No other course seemed open to a newspaper in whose reliability the industry is invited to put its faith.

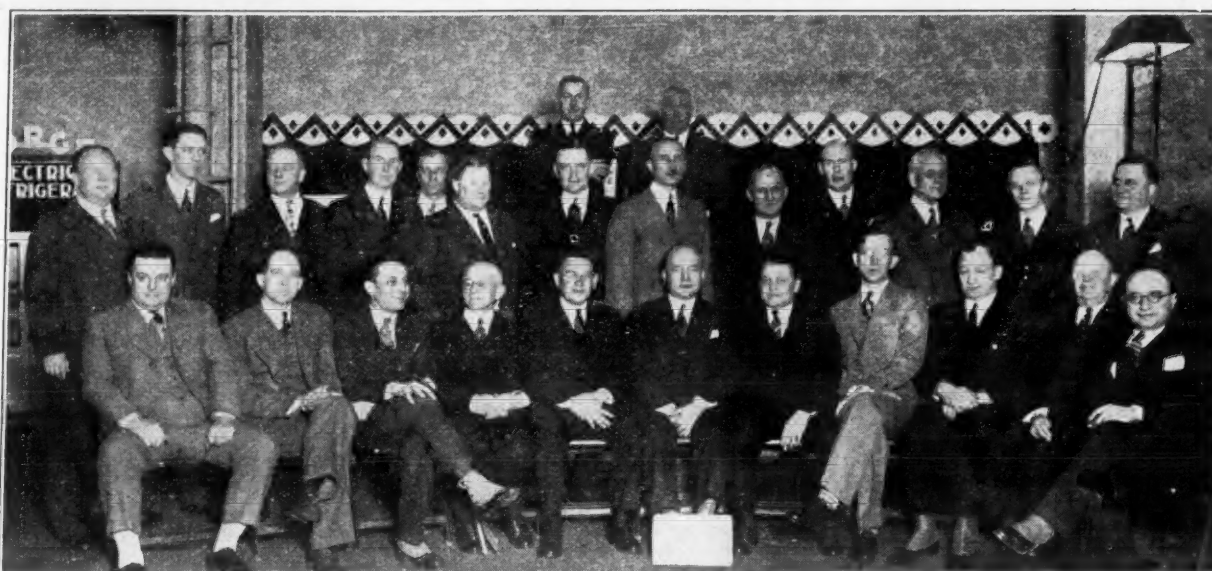
Red Ribbons

MEN who manufacture and sell ribbons refer to themselves as dealers in narrow fabrics. They may find it necessary to redesignate themselves, if the refrigerator industry keeps on buying oversized red ribbons to tie around Christmas refrigerators in their show windows, and thereby set an example to every purchaser of a refrigerator as a Christmas gift. But from what little news we have heard from the narrow fabric forces of late, nobody will have the slightest objection to a change in name if it means more business.

The refrigeration men, who are tying those big and bright red ribbons around their display units, are doing so not only because they are naturally anxious to sell more refrigerators, but because they genuinely feel that the modern refrigerator carries one of the greatest gifts of all into the home—protection against disease.

This business newspaper of the electric refrigeration industry believes, that the men and women in that industry realize that the remarkable record they have made in a year when others have faltered and so many are in actual want, is due largely to that health-guarding attribute of the product which they sell. With that thought uppermost in mind, the NEWS extends to all of its readers its best wishes for a Merry Christmas.

New Norges Presented at Chicago Convention



Chicago, Ill.—Norge distributors and factory representatives met here December 3rd and 4th at the offices of the Borg Warner Corporation, the parent company, to inspect the new Norge models. Plans were made for a 300% increase in Norge sales for the coming year. Magazine, newspaper, trade paper and direct-by-mail schedules on a large scale were recommended.

Reading from left to right, front row: H. M. Reagan, Phillip Gross Hardware & Supply Co., Milwaukee; W. W. Gambill, Jr., Braid Electric Co., Nashville; A. E. Bottenfield, Strong, Carlyle & Hammond, Cleveland; Ludwig Hommel,

Ludwig Hommel & Co., Pittsburgh; David M. Trilling, Trilling & Montague, Philadelphia; T. W. Carlyle, Strong, Carlyle & Hammond, Cleveland; J. H. Knapp, vice-president in charge of distribution, Norge Corporation, Detroit; W. O. Folk, Norge Columbus Sales Co., Columbus; A. J. Natho, Peerless Electric Supply Co., Indianapolis; E. E. McMullen, Norge Co. of Missouri, St. Louis; O. A. Brandel, chief engineer, Norge Corporation. Middle row: R. J. Mott, Norge Chicago Corporation, Chicago; E. R. Ryan, Norge Chicago Corporation, Chicago; R. L. Wallace, Norge Corporation, Detroit; Glen O'Harra,

Norge Corporation, New York branch; Cy Plate, Phillip Gross Hardware & Supply Co., Milwaukee; W. F. Evans, Norge Distributing Corporation, Detroit; F. D. Adams, The Adams Co., Inc., Waterloo, Iowa; J. G. Waddell, Wetmore-Savage Company, Boston; R. E. Densmore, general sales manager, Norge Corporation, Detroit; J. F. Morgan, Charleston Electrical Supply Co., Charleston; H. H. Walker, Norge Co. of Missouri, St. Louis; J. L. Willenbrink, The Sutcliffe Co., Louisville; J. E. Oliphant, Norge Corp., Detroit. Top row: W. H. Holmes, Holmes, Inc., Detroit; V. V. Dawson, Norge Chicago Corp.

THE EXPANSION VALVE

By GEORGE F. TAUBENECK

Nearly every electric refrigeration dealer can tell a variation of the story about the woman who phoned a Servel dealer in her town.

"Can you send a man out here to look at my Frigidaire?" she asked.

"But, madam," the dealer remonstrated politely, "this is the Servel Company."

"I know it," she replied. "Mine is a Servel frigidaire."

That name Frigidaire has succeeded so well in capturing the public fancy that, like Victrola for phonograph and Kodak for camera, it is often confused with competing products. Moreover, the Frigidaire legal department is constantly kept busy striving to protect the name against infringement.

Sometimes a choice of words, like the choice of trade names, can have a lot to do with the success or failure of a sale. A modiste's clerk, for instance, can probably make considerable headway with a woman customer by telling her that a certain gown can be purchased for a ridiculous price. But if he should tell her that the gown was offered for an absurd figure, a riot call would likely follow.

Not long ago we heard about a salesman who attributed his remarkable winter sales record to the first five words he always uttered when the lady of the house first opened the door:

"Miss, is your mother in?"

An opportunist is defined as a man who meets the wolf at his door and appears shortly afterward in a new fur coat. In the refrigeration industry a number of salesmen have earned the title during the autumn just passed by selling electric refrigerators to men who are probably the hardest to approach during September, October, and November of any group of wage-earners on earth, yet whose name would lend the utmost publicity value to a sale made at that time. You've guessed it: football coaches.

First on the honor roll should be the Copeland salesman (if he happens to read this, we'll appreciate his name and an account of how he did it) who persuaded Knute K. Rockne to sign on the dotted line.

The famous Notre Dame mentor, credited with having taught one of the greatest football teams of all time this season, is about as approachable when he has a team to think about as a lion who hasn't been fed for three days. Yet the salesman got the order, and the good name of Copeland has profited considerably thereby.

Here in Michigan Harry Kipke is almost as popular as a man who

has just inherited a million dollars and is looking for some place to spend it. Like Rockne, he developed an undefeated eleven this year. Harry was an all-American halfback at Michigan just a few years ago, and is still so young and inexperienced that he is hounded day and night by alumni who want to tell him how to do it.

Yet during Kipke's harassed months an enterprising G. E. salesman got him to sign up for a monitor top. Other recent G. E. sales to famous football coaches include installations in the home of Glenn S. "Pop" Warner, Stanford coach who invented the wing-back offense, and Hugo Bezdek, former Penn State coach and old time professional baseball player.

"Bo" McMillan, three-time all-American quarterback, who electrified a nation by leading tiny Centre College to a victory over Harvard, is now coaching the Kansas Aggies. Between important games a Frigidaire salesman sold McMillan on the merits of the cold control and the hydrator.

Another noted gridiron strategist who purchased a Frigidaire while doping out touchdown plays and figuring out how best he might use Cy Leland, the nation's fastest halfback last fall, was Francis Schmidt, coach at Texas Christian University.

Other famous names hooked up with electric refrigeration recently include Admiral Byrd and Madam Queen. The latter, who figures strongly in the machinations of Amos 'n Andy, particularly Andy, has announced to a raptly listening nation that she wants an "electric icebox" for Christmas. We hope she won't be disappointed.

Admiral Byrd's visit to Detroit provided occasion for the neatest crack of the month. Some wag opined that it was mighty fine for the polar explorer to discover "Little America" and all that land in the Antarctic, but the big problem is yet to come. Who's going to defrost it?

Vey, Faber & Roll, Inc., who merchandise G. E. refrigerators in West Palm Beach, Florida, have recently installed a PS-52 model in a home just completed in Miami Beach. That fact, in itself, isn't news. But the manner in which the sale was made is.

Many weeks ago David W. Cooper, star salesman for the above-mentioned concern, was on his vacation. In Washington, D. C., he stopped at the Capitol

filling station, which is located at the foot of Pennsylvania Avenue.

While the station owner was filling Cooper's car up with gas, a bit of small talk was exchanged, during the course of which Cooper learned that the filling station proprietor was erecting a home in Miami Beach. Cooper pulled out his order blank and made a sale, then and there, for December delivery.

From the Consolidated Gas Co. of New York come a couple of good Electrolux yarns. Both concern apartment houses. One of these compressed home arrangements is next door to a movie theatre, which has a big sign reading, "Pictures with Sound."

The renting agent of the apartment building was not to be outdone. He erected a sign which says: "Automatic Refrigeration Without Sound." The agent claims he is doing a better business than the theatre.

Story No. 2 from this source concerns a young wife who had just moved into what she assumed was a modern apartment. Not long after moving she called the Consolidated Gas Co. and complained that her Electrolux wouldn't get cold.

Imagine the surprise of the service man who was sent out when he found that the complainant had only an ordinary ice box in her apartment!

The new tenant had taken it for granted that any modern apartment would have mechanical refrigeration; and since other apartments in that building were Electrolux equipped, she assumed her refrigerator belonged also to that family.

Perhaps the prize request received by a public utility in some time, however, came to the Menominee and Marinette Light and Power Co., which operates in Wisconsin and Michigan.

Attached to a letter regarding an account was a coupon which read as follows:

"Please send me free sample of Hire's Root Beer Extract."

DETROIT ENGINEERS PLAN JANUARY MEETING

Detroit, Mich.—Activities in the Detroit Section of the American Society of Refrigerating Engineers will get under way for the new year on January 5th. At this time, the engineers will meet at Webster Hall with W. L. Badger, professor at the University of Michigan, as chief speaker. Mr. Badger is a well known authority on transfer of heat and his discussion of problems will be of special interest to the engineers. The meeting will be preceded by a dinner at 6:30 p. m.



★ Revolutionizing the Retail Sale of Electric Refrigerators

How the new SERVEL HERMETIC—a highly simplified, hermetically sealed electric refrigerator—entirely eliminates the costly Service Department

ELECTRIC REFRIGERATION has always been altogether too complicated. The refrigerators themselves were a collection of complicated moving parts. Sales methods were complicated—and contacts with customers after they were sold were the most complicated of all.

Now Simplified Refrigeration is here—with the new Servel Hermetic—climax to our ten years in this industry.

Here's a hermetically sealed refrigerating unit that contains fewer moving parts. It requires no fans, no belts, no pulleys, no chains. There are no float valves, no expansion valves—no fuses, no stuffing box seals. All these trouble-making parts have been entirely eliminated.

NO MORE COSTLY SERVICE DEPARTMENTS

Now you can run a clean-cut merchandising business without a repair shop. No longer must you watch service expense steadily eat away your profits. When you sell a hundred jobs you can

figure what your net will be—instead of making a guess at it.

The Servel Hermetic arrives with the refrigerating unit already in place. Just set the cabinet in the kitchen and plug it in.

Your customer is assured of longer years of "care-free" refrigeration—with this highly simplified, expertly engineered unit.

The Servel guarantee, during its period, not only gives the usual protection against defective parts but is an assurance of entire freedom from the expense of repairs for any reason whatsoever other than abuse. It provides complete protection to both the purchaser and the dealer.

If need for repairs arises within the guarantee period, you simply replace the unit (an easy, one-man job, requiring no skill, no tools or equipment except a screw-driver) and ship it to us, for repairs.



THE ASSURANCE OF GREATER PROFITS

Retail dealers and distributors are quick to appreciate the tremendous profit possibilities in this highly simplified electric refrigerator.

The Servel Hermetic is backed by the entire resources of the great Servel organization—with 29 acres of factories.

It is nationally advertised powerfully and steadily to millions of families through full-color advertisements in the Saturday Evening Post.

With three models priced under \$200.00 its market is limited only by the number of wired homes in your community.

Now kitchen demonstrations are both easy and convenient. The most effective sales method the electric appliance industry has ever found is at your service with the Servel Hermetic.

WRITE FOR OUR NEW DEALER PLAN

Investigate the profitable new set-up arranged especially for the Servel Hermetic.

SERVEL SALES, INC., EVANSVILLE, INDIANA

SERVEL

HERMETIC



★
3 MODELS
PRICED TO
SELL AT **\$165⁰⁰**
AND UP
WITH THESE STRONG
SELLING POINTS

- Hermetically sealed unit
- Fewer moving parts
- No moving parts exposed
- No more kitchen repairs
- Costs less to operate
- Quietest unit ever built
- Handy temperature control
- More, usable shelf space
- Beautiful, graceful cabinets
- Flat, usable top

REFRIGERATION PROMOTED BY CLEVELAND LEAGUE

By T. L. Losby

THE Electrical League of Cleveland will soon enter its twenty-second year of service as the electrical industry's market development agency in Cleveland. The League endeavors to serve its membership in the most effective yet most economical manner possible, always keeping in mind its objectives, which follow:

1. To promote concerted co-operative trade campaigns to stimulate and increase sales for its members.
2. To do such promotional work of an educational nature which will create a wider and better informed market for electrical appliances.
3. To maintain contact among the various groups of the industry for the promotion of continuous helpful relations and good will within the industry.
4. To function as an information bureau to the public on all subjects electrical, whether used in the factory, store, office or home.
5. To maintain an exhibit of electrical appliances used in the home where homemakers may learn about and compare the various appliances.
6. To educate the public to the value of the League's endorsement of electrical standards of wiring, lighting, appliances, etc.; and the integrity and ability of the industry which it represents.

The League maintains a full-time paid staff of six persons in the appliance division. The efforts of the staff are naturally distributed over all of the appliances. However, the refrigeration group has received a large portion of the League's attention and a corresponding large portion of its budget is devoted to appliances.

The League's advertising displayed over its own signature, appearing in the three local daily papers since January 1, 1930, amounts to exactly 2,124 column inches, at a cost of approximately \$8,496.

In addition to the space used in daily papers, electric refrigeration advertisements have appeared in approximately twenty-five English and foreign language weekly and monthly publications to the extent of 2,672 column inches, at a cost of about \$4,008. This means that a total of \$12,504.00 has been spent by the League this year for advertising space to sell the idea of electric refrigeration to the people of Cleveland.

While this advertising copy was aimed

at Clevelanders, nevertheless Cleveland daily papers, to the extent of nearly 200,000 copies per day, are delivered to the homes of people in cities within a radius of one hundred miles of Cleveland. This means that we have called refrigerators to the attention of people in approximately a half-million homes in this section of the country.

The League's electric refrigerator exhibit, which is a part of the Building Arts Exhibit and adjacent to the Home In the Sky in the new Builders' Exchange Building, has been in existence since April 5, 1930. There are approximately twenty-five refrigerators (Westinghouse, Kelvinator, Frigidaire and General Electric) displayed in the 41,000 square feet of floor space.

With the aid of special charts and booklets furnished by the League in addition to the manufacturers' literature, women especially trained by the League give all visitors complete and authentic information on the advantages of electric refrigeration in the home. Of the 240,000 people who registered at the entrance of the Building Arts Exhibit, 59,121 people have discussed the advantages of electric refrigeration with League representatives since this special refrigerator exhibit was opened. In addition, the League prepared a special refrigeration booklet of which 10,000 have been distributed personally to interested visitors.

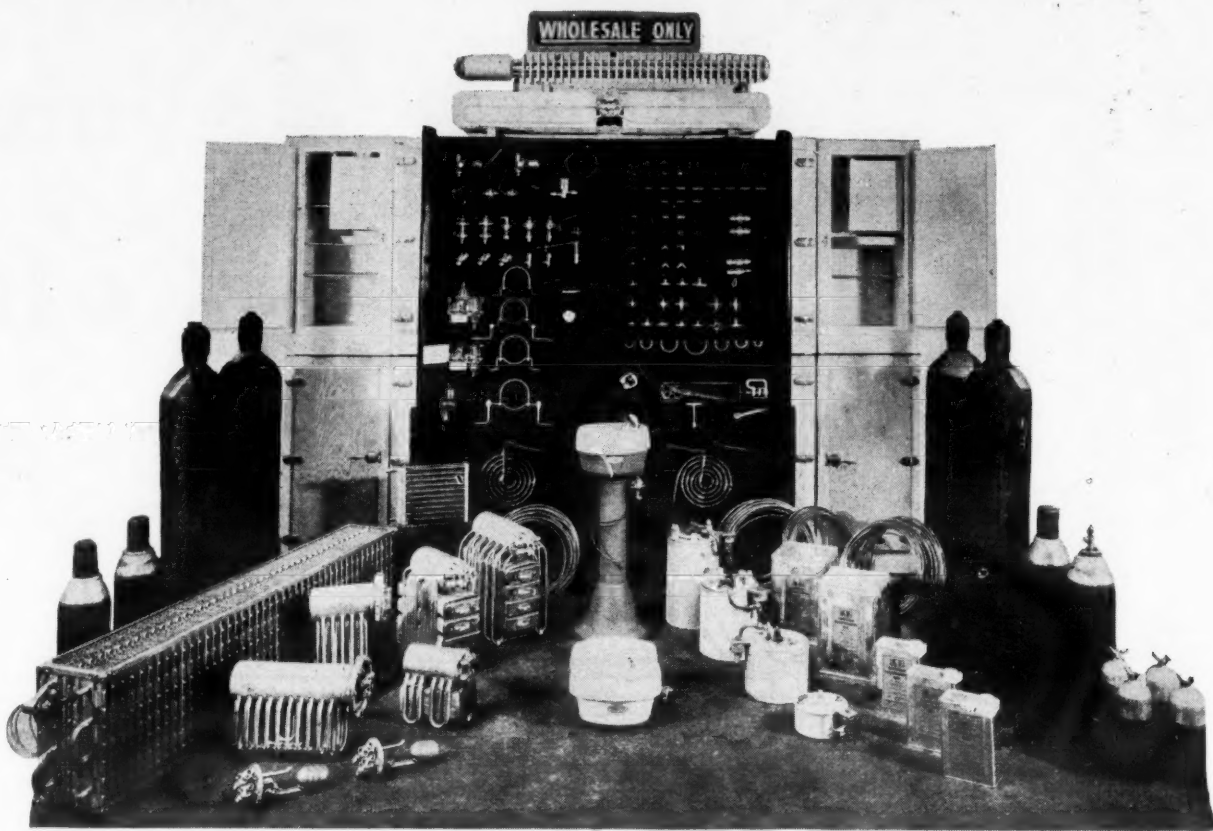
The "Exhibit of Everything Electrical for the Home" at the League quarters includes a refrigerator display of two models from each member company. Since January, the attendance has been 10,896.

Included in the appliance division's activities is a lecture service in which various groups are contacted and invited to visit the League quarters and learn about electricity in the home. Since the beginning of the year 145 groups have taken advantage of our invitation and have listened to a talk which includes food preservation by electricity.

BRAID ELECTRIC GETS NORGE FRANCHISE

Detroit, Mich.—The Norge Corporation, manufacturer of the rollator type of electric refrigerators, has appointed the Braid Electric Company, 107 Ninth Ave., S., Nashville, Tenn., as distributor. The firm, of which W. W. Gambill, Jr., is manager, maintains branches at Knoxville, Tenn., and Birmingham, Ala. The Braid Company is planning to franchise a number of Norge dealers in its territory.

Represents Manufacturers on Pacific Coast



General Manager



J. A. McLaren

Engineer



C. M. Gilbride

Los Angeles, Calif.—The ever-growing popularity of mechanical refrigeration along the Pacific Coast has led to the formation of Refrigeration Products, Ltd., as representatives of manufacturers in this territory. The company was organized last summer and it is rapidly expanding its line, having at the present time Pacific Coast rights for products of several companies.

Headquarters are at 1110 North Alameda St., Los Angeles, and here complete stocks of refrigeration parts and equipment are carried so that manufacturers and distributors may obtain the necessary products on very short notice. The company has set up engineering and sales departments to assist the trade.

At the head of the organization is J. A. McLaren, general manager, who is well known in the refrigeration industry, having been connected with several companies in the Middle West. Before accepting his present post, Mr. McLaren was sales manager of Universal Cooler Corp., Ltd., of Windsor, Ont. Prior to that he was associated with the Valerius Corp., manufacturers of soda fountains, as Michigan and Ohio representative, and the Norge Corporation of Detroit.

C. M. Gilbride, in charge of engineering for Refrigeration Products, was formerly connected with the Kelvinator organization.



Headquarters of Refrigeration Products, Ltd., in Los Angeles

Refrigerators

Tested • Both Ice and Mechanical
Refrigerators Tested for Performance in our Refrigerator Laboratory. This service is unique for the Manufacturer or Distributor.

We invite your inquiries.

George B. Bright Co.
Refrigerating Engineers and Architects
2615 12th Street, Detroit

Brighten up

your dull months!

Are you looking for something to add to your line—a home specialty which will bring in money when refrigerator sales are at the low point—a device in no way competitive with refrigerators yet similar in selling method, market, installation? Then write for our liberal distributor proposition on Thermo-King, an admirably simple, efficient, time-tested, thermostatic control for hand-fired and automatic home-heating with coal. Other refrigerator distributors have filled out the valleys in their yearly sales curves with Thermo-King. You can, too.

Write today for information

HEAT CONTROL CORPORATION
Hatfield, Mass.

Protect!

your
**Nose
Throat
Lungs**
from

**Sulphur
Dioxide (SO₂) Fumes**

**Use the PULMOSAN
CHEMICAL CARTRIDGE
RESPIRATOR**

... the choice of leading refrigeration companies and dealers.

**Small—Light—
Convenient—SAFE!**

Clip this Coupon for Full Information.



PULMOSAN SAFETY EQUIPMENT CORP.
176 Johnson St., Brooklyn, N. Y.
Gentlemen: Send us full information on your No. 33
Name _____ Address _____
(E. R. N.)

MAJESTIC ADDING MANY DEALERS IN BOSTON AREA

Boston, Mass.—Majestic Distributors, Inc., has been appointed wholesale distributors in New England for the Majestic electric refrigerator. Four retail dealers have been appointed in Boston and 42 others in other cities and towns and districts of metropolitan Boston, as follows:

Central Radio Stores, Imperial Radio Company, Houghton & Dutton department store, N. Sallinger, credit house, and World Radio Co., all of Boston; Ktansberg Furniture Company, Beverly; Central Radio Stores, Brockton; Gilman's Inc., Chelsea; The Radio Shop, Concord; Globe Furniture Company, Dorchester; J. J. Plottl, Dorchester; Green's Furniture Store, East Boston; Modern Furniture Company, Fall River; Clark & Sullivan, Foxboro; J. H. Robinson & Sons, Framingham; Bradley Electric Company, Haverhill; Tucker, McCann Furniture Company, Haverhill; Dykeman Bros., Hingham, Hull and Cohasset; Thomas W. Steele, Hyde Park; Central Radio Stores, Lawrence; Michael J. Sullivan, Inc., Lawrence; Lexington Tire Service, Lexington; Central Radio Stores, Lowell; Price-Walter, Lowell; Dine Furniture Company, Lynn; J. B. Ruderman & Sons, Malden; Smith's Radio Store, Middleboro; Sherman Motor Company, Milford and Med-

way; Davis Radio Company, Natick; Suburban Hardware Company, Needham; Dow's Music Store, Newburyport; J. Edwin Anderson, North Easton; Sousa Oil Company, Peabody; Central Radio Stores, Quincy; Dine Furniture Company, Salem; Miller's Music Store, Salem; Broadway Battery & Tire Service, South Boston; Chris Murphy, South Boston; Archie G. Wills, Stoneham; Woodward's Bicycle & Radio Store, Taunton; James S. McGonagle, Wakefield; Hawes Electric Company, Watertown; Young's Hardware, Watertown; Sherry & McKinnon, Inc., West Roxbury; Shirley Hardware Company, Winthrop.

NEW FINISH DEVELOPED BY AMERICAN NICKELOID COMPANY

Peru, Ill.—The American Nickeloid Company has developed a satin finish in both Nickeloid (nickel zinc) and Chromoloid (chrome zinc) metals, which it is offering to the trade.

The new satin finish can be formed or bent without distorting the surface. Scratches and abrasions occurring in the handling of the metals do not show as on a highly polished surface.

Both of the metals with the new finish are furnished in a full range of sizes, gauges and tempers.

COURSE IN BOXING AND CRATING SCHEDULED

Madison, Wis.—The Forest Products Laboratory of the Department of Agriculture, at Madison, is offering another course in boxing and crating practices from January 12-17, inclusive, 1931. A new phase of instruction will be transportation hazards of handling and of car movement. The course will include tests to show advantages and limitations of different styles of nailed wooden boxes, wire-bound boxes, and fiber boxes; tests to show the importance of adequate nailing; effect of varying number of pieces in sides, top, bottom and ends; advantages of hardwood ends and cleats; effect of using green lumber; and advantages of metal strapping; and tests of crates to show the best types of construction for various loads.

Laboratory engineers are prepared to examine during the course a limited number of containers sent in by firms enrolling their employees, and to offer suggestions for improvement.

NEW LEONARD DEALER

Anaheim, Calif.—Blutzel - Wethered Furniture Company has acquired the dealership for Leonard electric refrigerators in Anaheim and surrounding territory.

LEADING AGAIN

CABINETS BY

Seeger

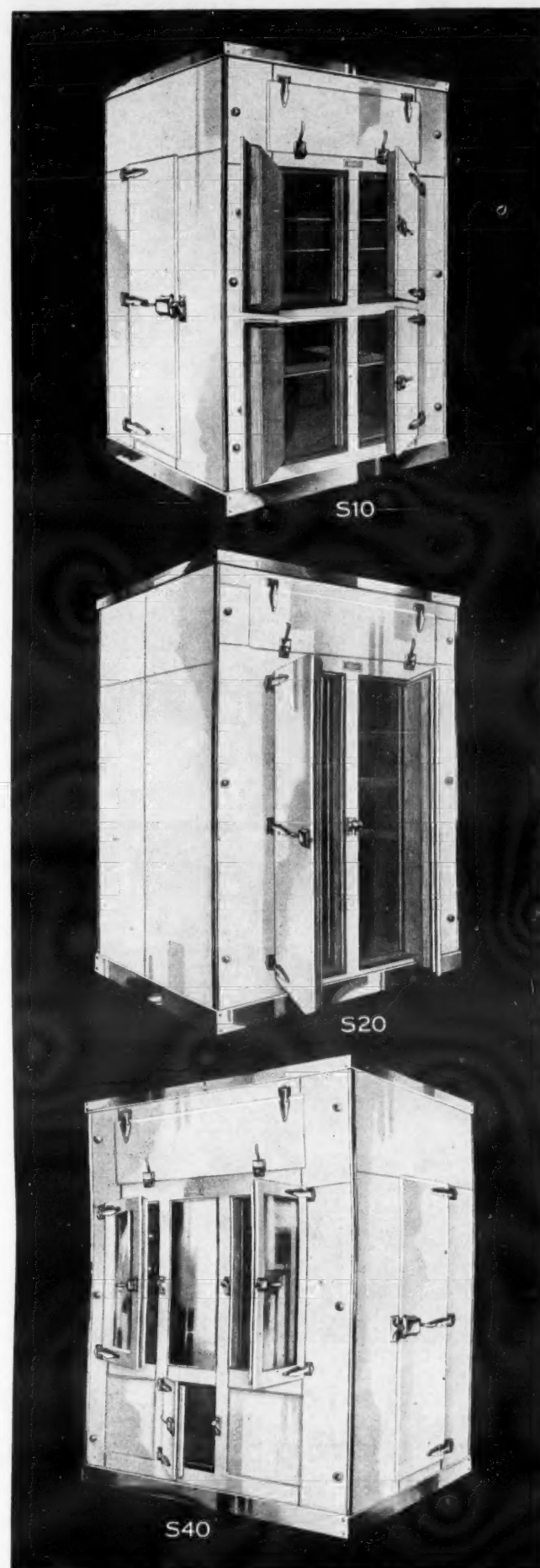
SAINT PAUL

Leading again, Seeger Refrigerator Company pioneered and built household Cabinets years ago for the Electric Refrigeration Industry, Cabinets for household purposes built solely for electric machines...and not so many years ago led again in manufacturing and carrying in stock the smaller and medium size Cabinets constructed specifically for Electric Refrigeration... and now, last but not least, Seeger again pioneers field with the larger extra heavy duty Commercial Cabinet, thus allowing distributors to figure on largest jobs for stores and institutions, making it possible for distributors to say that no job is too large.

The Engineering and Designing staff of Seeger Refrigerator Company will assist with designs and drawings for Commercial Cabinets if told what is wanted.



S1802



S10

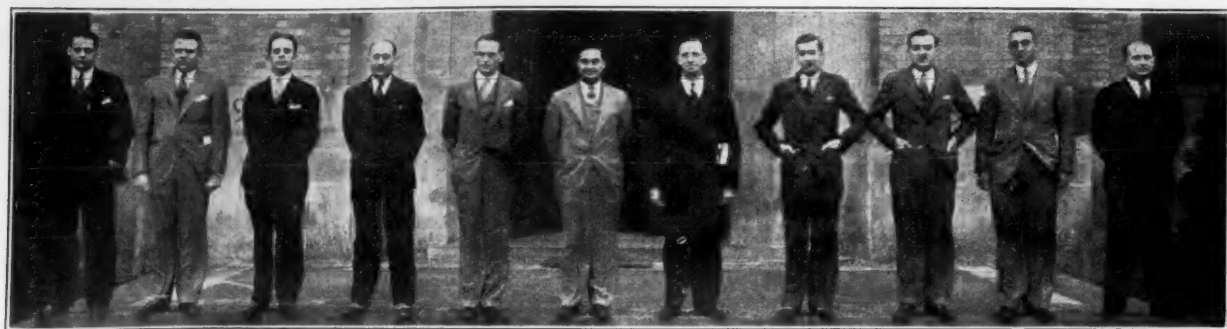
S20

S40

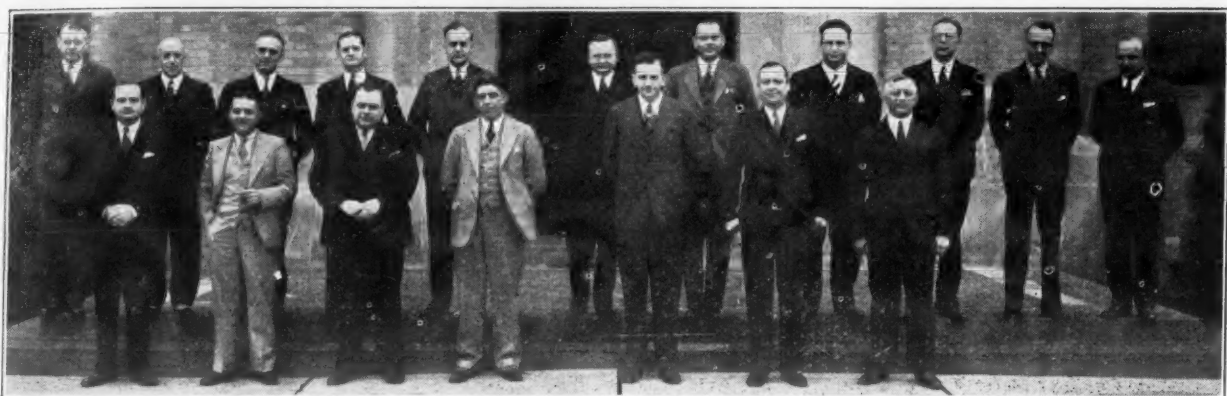
These Commercial Cabinets by Seeger may be had with Porcelain Exterior, Lacquer Exterior, Golden Oak Exterior, in combination with Porcelain Interior, Galvanized Steel Interior, Wood Interior.

CABINETS BY
Seeger
SAINT PAUL

Kelvinator Field Staff Assembles for Conferences



(Above)—Field Sales Representatives of the Kelvinator Corp.



(Above)—Kelvinator's Crew of District Managers.



Stop the Christmas shopping crowds!

Display
FLEXOTRAY
and increase your Christmas sales

Here's a FLEXOTRAY window display that will stop the shopping crowds and bring in buyers. It's Christmasy... full of good cheer... a timely Christmas suggestion to women who are looking for a gift for "him."

Just one look at this display and the passer-by gets the story. For the many advantages of FLEXOTRAY stand out at a glance.

What ease it adds to entertaining! For ice cubes do not stick to FLEXOTRAY. They are released instantly, a whole trayful or one at a time, without melting or splashing. They pop out dry, sharp-edged, and several degrees colder than those you melt out of metal trays under the faucet. No spotted clothes, no messiness... no delay.

USE THIS SUGGESTION

Don't let any woman Christmas shopper leave your store without suggesting FLEXOTRAY as the ideal man's Christmas present. Put in a window display like the one shown here or make a special display of FLEXOTRAYS in Christmas packages. This will not only promote the sale of FLEXOTRAYS but will also bring in refrigerator prospects. And don't let your refrigerator salesmen make calls without taking a FLEXOTRAY along. It opens doors, makes salesmen welcome and leads to sales.

FLEXOTRAY can be obtained from manufacturers, distributors and dealers who handle most mechanical refrigerators. Write the manufacturer of your refrigerator or

THE INLAND MANUFACTURING CO., DAYTON, OHIO



BETTER ICE CUBES... EASIER

Detroit, Mich.—Field representatives and district managers were called in recently by the Kelvinator Corporation for a two-day conference with officials at the factory here. Plans for the coming year were discussed.

Pictured above are the field sales representatives: (Left to right)—E. E. Brammer, W. M. DeWitt, R. I. Eshman, J. Glaser, C. B. Jones, S. A. Kelsey, J. B. Loomis, E. H. Manier, C. T. Smith, W. C. Stephenson, and R. M. Underhill.

The district managers who attended the conference are pictured above: (Front row)—C. D. Mitchell, J. K. McCarthy, G. J. Malone, T. H. Maginniss, H. L. Percy, S. R. Kemp, and A. H. Rick. (Rear row)—C. R. Brogan, H. W. Browne, J. C. Burton, C. V. Calkins, S. D. Camper, J. F. Crossin, H. A. Dahl, Wm. E. Day, T. P. Hallock, L. W. Klein, and L. L. Langley.

R. I. Petrie and J. S. Cortines, regional directors, attended the meetings.

PATENTS

Secured for inventions relating to Refrigeration, Electrical Apparatus and Treatment and Handling of Foods and other important subjects.

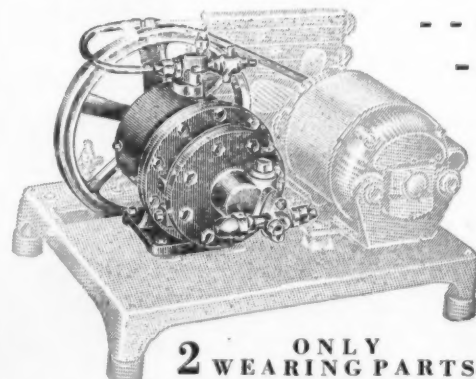
MASON, FENWICK & LAWRENCE
Refrigeration Patent Experts
Patent and Trade-Mark Lawyers

Established 1861 Washington, D. C.

TRADE MARKS

**The International Compressor
—for Electric Refrigerators—
Entirely NEW... Gyrotory--**

**THEY'RE ALL WILD OVER IT-----
DOZENS OF MFGRS ARE ADOPTING IT**



ONLY 2 WEARING PARTS

Complete compressor units are furnished if desired.

International Oil Heating Co.

3800-10 Park Ave.

Dept. R.N.

St. Louis, Mo.

COUPON

Gentlemen:

Please Mail Free Information

NAME

ADDRESS

KELVINATOR 1930 PROFITS SHOW 31 PER CENT GAIN

(Concluded from Page 1, Column 2)
sales of commercial refrigeration units and substantial increases in domestic refrigeration. With respect to domestic refrigeration, Kelvinator sales increased both in units and in dollar value, the actual increase in dollar sales being 31 per cent over those of the previous year. "Just prior to the close of our fiscal year we introduced our new Yukon line

to reach the low priced field, and about the same time introduced for our Leonard organization a line of electric refrigerators to permit us to utilize to the fullest extent the fine Leonard dealer organization. Both of these lines, embodying new features of design and distinct changes from the standpoint of installation and operation, have had a fine response from the public, our dealers and our own sales organization. All of the expense incident to the engineering, development and announcement of these models has been absorbed into the operations of the fiscal year ended September 30, 1930."

COMPARATIVE BALANCE SHEETS KELVINATOR CORPORATION AND SUBSIDIARIES

	Sept. 30, 1930	Sept. 30, 1929
ASSETS		
Current:		
Cash and certificates of deposit.....	\$ 1,561,865.99	\$ 550,498.30
Customers' receivables.....	2,198,409.36	2,433,856.95
Inventories.....	3,112,795.31	4,177,346.68
TOTAL CURRENT.....	\$ 6,873,070.66	\$ 7,161,701.93
Investment in Subsidiaries.....	1,780,444.34	1,663,241.49
Other assets.....	2,776,763.77	2,796,548.37
Permanent assets, less depreciation.....	4,628,165.18	4,175,333.82
Patents, good will and development.....	814,014.98	821,024.27
Deferred charges.....	369,510.44	238,109.89
	\$17,241,969.37	\$16,855,959.77
LIABILITIES		
Current:		
Accounts payable.....	\$ 762,164.57	\$ 938,248.14
Accrued expenses.....	150,610.20	214,563.24
TOTAL CURRENT.....	\$ 912,774.77	\$ 1,152,811.38
Ten-year 6% gold notes outstanding.....	1,603,500.00	2,528,500.00
Reserves for free service, contingencies, etc.....	158,698.82	235,359.60
Minority interests.....	4,808.75	4,828.12
No par capital stock and surplus.....	14,562,187.03	12,934,460.67
	\$17,241,969.37	\$16,855,959.77

PLANT INSPECTION STORIES EVOKE VARIED COMMENTS

THE November 5 Buyer's Guide Section of the News proved to be so much in demand that more than 26,000 copies were sold. A second printing was necessary. Many dealers and distributors were clamoring for more after the supply of extra copies ran out.

Two stories in this "pink section" evoked considerable interest from readers—the stories of trips through the recently equipped Majestic and Serval plants.

From some of the letters praising these stories we quote the following extracts:

"We certainly think you did a good job when you wrote a description of both the Majestic and Serval plants."—T. E. Humphrey, advertising manager of Drying Systems, Inc., Chicago.

"I have just finished reading your November fifth issue and I can't resist the temptation to write and thank you for the wonderful way Mr. Taubeneck handled the story about his visit to Evansville."—V. E. Vining, sales manager, Serval, Inc.

"I think the articles which you wrote from your inspection of our plant dis-

played an unusually apt insight as to what is actually going on. They have sparkle and interest, which I do not believe is entirely occasioned by the fact that you are writing about us."—Paul Jones, advertising and sales promotion manager, Serval, Inc.

One reader, however, was not particularly impressed by the "sparkle," "interest" and "insight" of the stories. Writing from the Sir Francis Drake Hotel, in California, O. G. Tinkey picks out several sentences from the two stories and comments as follows:

REFRIGERATION NEWS,
Detroit, Michigan.
Gentlemen:

My-my-goodness! What has come over our dear little ELECTRIC REFRIGERATION NEWS? Now that all the men folks have been boasting so about the wonderful little trade paper of the Electric Refrigeration Industry, apparently a play is being made to interest the ladies.

Ladies' Journals and Magazines better beware! Just you listen now:

"A fortnight ago we arose weary and aching from a vibrating Pullman crib in Evansville, Indiana. It was raining. Smoke permeated the muggy atmosphere. The streets were desolate and ugly. Optimism? Good humor? Heh, heh."

"Nor is the visitor disappointed. The first sight that meets the gaze is a row of mighty punch presses which chew up sheets of steel into refrigerator cabinets, liners, legs, and tops with single crunches of their mighty jaws."

"These clanging monsters leave an impression upon one's mind almost as lasting as the impression they make on the steel fed into them."

"Talking in the machine-gun manner made famous by Floyd Gibbons over the radio, the dynamic Mr. Cooper speeds through the various factories, his followers attempting to keep up the pace, and explains the different operations as they are passed en route."

"After tearing one's eyes from this fascinating machine, one watches the porcelain liners—one-piece steel sheets with welded joints—as they are cleaned, sprayed inside and out with an oil base primer, and baked in a tunnel-type oven."

"This plant is almost running over the top and bursting out at the sides with machinery."

"While the casual visitor may be confused and bewildered by the profusion of grinding machines all about him in the cooling unit manufacturing plant, he never fails to revive and take a keen interest in the testing instruments, which appear at regular intervals along the journey."

Anyway, we are wondering if it may be possible to procure the services of a reporter, slightly mechanically inclined, to write up factories and factory operations in a special little column for the men.

Sincerely yours,

O. G. TINKEY.

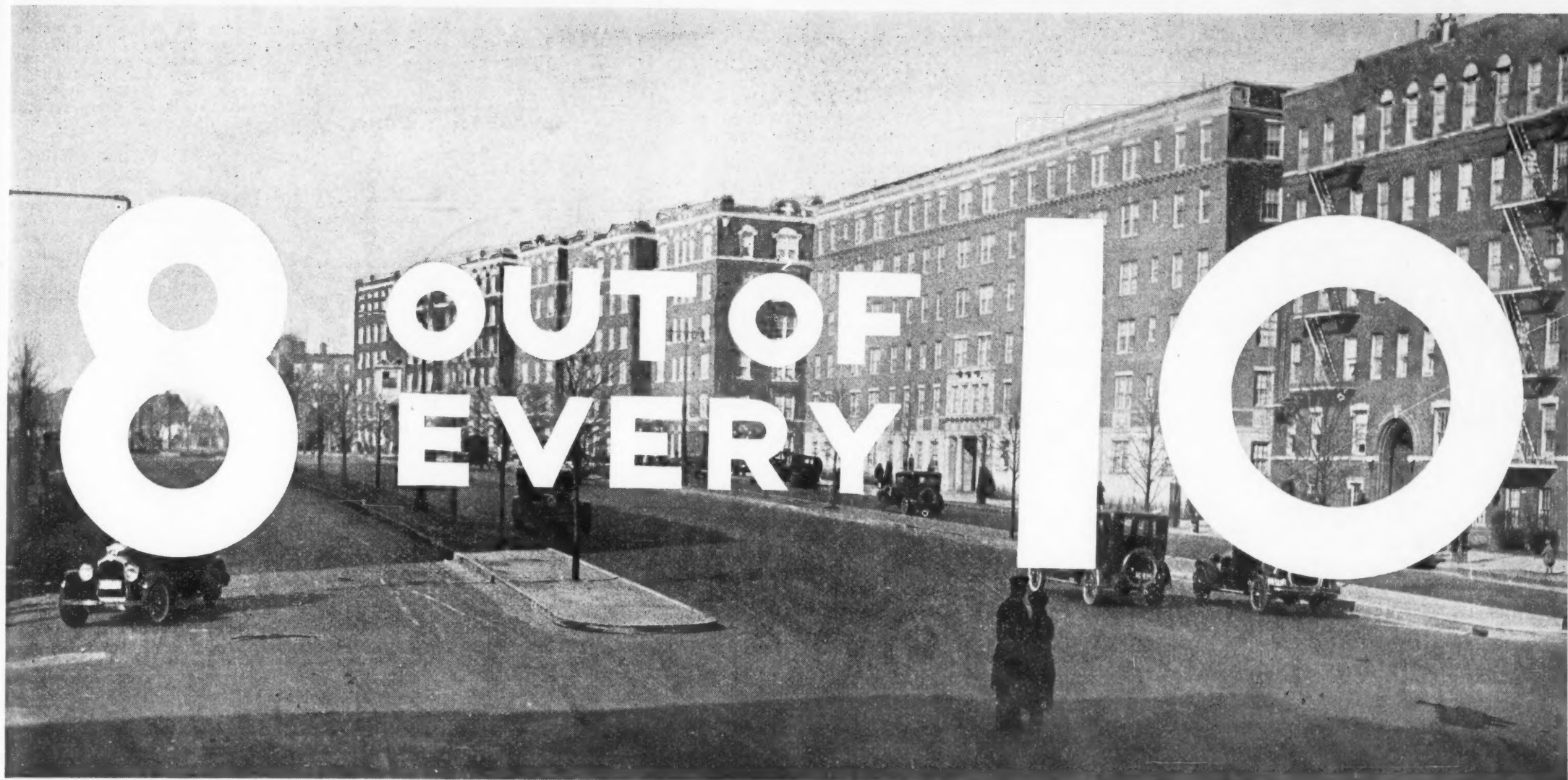
Many of our readers tell us that their wives do read ELECTRIC REFRIGERATION NEWS regularly.—Editor.

WE BUY
New and Used **ELECTRIC**
REFRIGERATORS
In Any Condition

Phone, Write or Wire All Details,
Type of Motor, Size of Box, Etc.

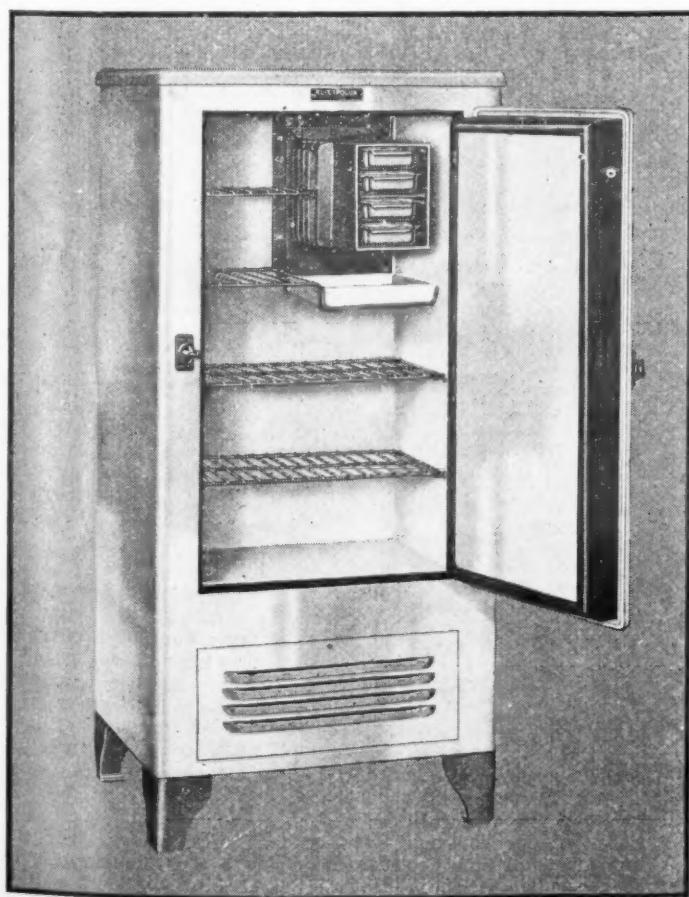
KASKEY & QUINN, Inc.
525 Arch Street Philadelphia, Pa.

Electrolux chosen for



New Bronx Apartments

THE BRONX—second largest borough in New York City—is going Electrolux in an amazing way! During the first nine months of this year, 74 new apartments were built in the Bronx. Apartments ranging from 10 to 100



SAVES OWNERS MONEY

That's why Electrolux is such an overwhelming favorite. The Kitchenette, shown above, is one of the fast-selling apartment and small kitchen models.

families apiece. And for 62 of these modern apartment buildings, Electrolux was the choice!

It is one thing to praise. It is another to forge this praise in the fire of stubborn, irreducible facts. The facts cannot be denied. Electrolux is the choice of 8 out of every 10 of the builders and owners of the Bronx's most recent apartment constructions. And, in a large number of cases, this is not the first, nor even the second, time that these very same builders and owners have chosen Electrolux. Many of them have already installed Electrolux refrigerators in several other of their buildings during the past two years.

It is the complete satisfaction which Electrolux gives owners and builders that has made for its rapid, phenomenal success. Once an

owner has placed Electrolux refrigerators in a building, he will undoubtedly again specify Electrolux for his next building. He's enthusiastic, too. Willing to tell his business associates, his friends in the building profession, how much money and worry Electrolux has saved him. And good news of this kind spreads like wildfire!

Every day, you see new apartments going up about you. Large ones, small ones. There are the old-fashioned apartments, too... apartments that require little more than automatic refrigeration to put them in the fast-renting market again. You can sell them all. Electrolux is the builder's choice. It is the owner's choice. So don't fail to take your share of this valuable market.

Electrolux Refrigerator Sales, Inc., Evansville, Ind.



A tiny gas flame takes the place of all moving parts

ELECTROLUX

THE *Gas* REFRIGERATOR

KELVINATOR QUARTERS IN SPRINGFIELD OPENED

Springfield, Mass. — Kelvinator-Raff Corporation, formed to distribute Kelvinators in western Massachusetts, has opened a store and display room at 141 State St., in Springfield. This is an associated company with the Frederick Raff Company of Hartford. Frederick Raff is president and N. B. Francis is treasurer. Trafton Mason, for some time associated with Kelvinator activities in this section, has been appointed manager.

SERVICE COMPANY FORMED IN DES MOINES

Des Moines, Iowa — A newly organized electric refrigerator repair firm has opened a shop in this city at 817 Hull Avenue. The company will be known as the Anderson Electric Refrigeration Service Company and will repair and service all makes.

Be An EXPERT in ELECTRIC REFRIGERATION

Learn at home new easy way. Oldest, largest home study electric refrigeration school offers thorough, practical training, endorsed by Servel, Kelvinator, Copeland, Zerone, and other leading manufacturers. Wonderful pay-raising opportunity for service men; practical help to dealers, salesmen, manufacturers. Special proposition to firms who wish to train staffs. **FREE BOOK** explains everything. No obligation. Utilities Engineering Institute, Dept. 9120, 4403 Sheridan Road, Chicago, Ill.

Larmac Carrier and Two Men easily deliver most any refrigerator



Note the ease in unloading. Loading is equally easy.

Endorsed by leading refrigerator manufacturers

Something entirely different in trucks.

Reduces your delivery expense and increases customer satisfaction.

Write today for specifications and prices. Be sure to mention what make of refrigerator you handle.

Larmac Company
DAYTON, OHIO

Refrigerator Secrets Exposed By Kindergarten Tactics

Dayton, Ohio—Believe it or not, but Trupar Manufacturing Company executives are confident that R. J. Lawrence, commercial manager of the company, has solved all the mystery connected with electric refrigeration. In fact, they declare, he has made the science so plain that even boys and girls can understand what it's all about.

Mr. Lawrence recently wrote a series of articles on electric refrigeration for Trupar sales organ, "Fair and Cooler," under the title "The Refrigeration Kindergarten." While the two following chapters may contain much wit and humor, they tell the story of electric refrigeration in a most unique and concise manner—so much so that they have attracted widespread interest:

Why Is a Cooling Unit and How?

Imagine, if you can, a round object, so many inches square, with a reciprocating wheelbase. A cooling unit is entirely different.

The cooling unit is a metal container inside the refrigerator. Recently we explained how sulphur dioxide worked up a sweat, absorbed the surrounding heat and beat it for new pastures. The cooling unit is the scene of this drama.

Our staff photographer got the accompanying action picture. The surgeon has cut away part of the abdomen, so friends from the country can see what's inside. The tossing waves show the level of liquid sulphur dioxide. The wiggles

never stand for that, so we'll call them Pat and Mike.

When the curtain rises, Pat and Mike are discovered, with thousands of others, living under crowded tenement conditions in a hot potato.

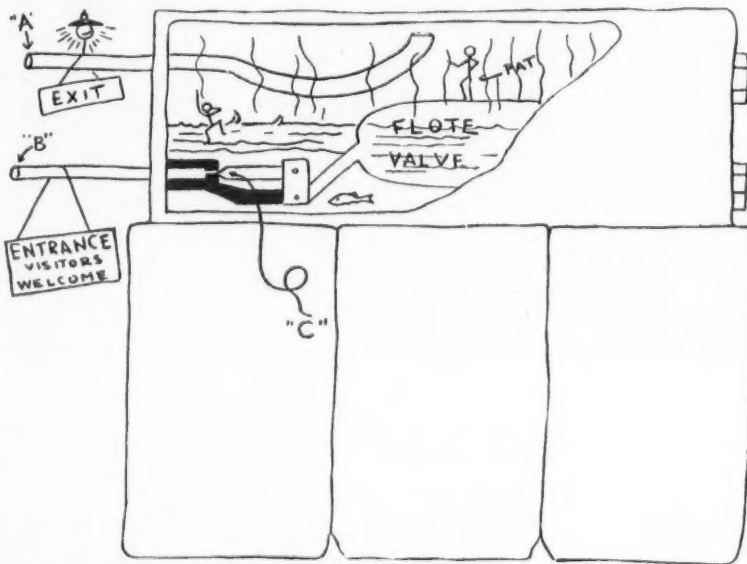
The spud is plopped into the refrigerator. Ready, action, camera!

Pat hitches up his suspenders, grumbles at the gang around him and cocks a wary eye at the cooling unit—"Dot dere," he says to Mike, "iss a swell place, yet, mebbe we findt more room dere, let's go."

So Pat and Mike sneak off to the cooling unit—but ssh? First one heat unit, then another, soft shoes behind them. Hotly pursued, Pat and Mike bore through the cooling unit itself and jump with a splash into the sulphur dioxide.

Two Irishmen can start an argument, but three start a fight—when the rest of the gang follows and starts crowding and shoving, the sulphur dioxide becomes annoyed. It starts to bluster and bubble and its blood pressure goes 'way up.

The fight goes on all the way down the exit or suction line, at the end of which is a switch. Pat swings at somebody, misses and stumbles, kicking over the switch. This starts the motor on the compressor, which grabs Pat and Mike by the seat of the pants, drags 'em out of the cooling unit and kicks them through the back door.



above show the gas resulting from boiling. "A" is the exit, where the gas goes offstage, carrying heat with it.

As the gas boils away, the liquid level goes down like the stock market. As the float drops, it pulls the pin in the needle valve "C" and lets in some brand new, fresh sulphur dioxide, which in turn fumes, splutters and exits with an armful of heat.

The Absorbing Mystery or Sex Life of the Heat Units

Heat units are known to their Sunday School teachers as British Thermal Units, but the Irish in our class will

PATENTS

Searches, Reports, Opinions by a Specialist in REFRIGERATION
H. R. VAN DEVENTER
Solicitor of Patents - Refrigeration Engineer
342 MADISON AVE. NEW YORK

FROZEN LIGHT CARRIED TO MEETING IN BOTTLE

New York, N. Y.—Baron Munchausen, reputed the world's biggest liar, told a big one when he described his frozen sound, but recently he has been outdone by a demonstration of frozen light conducted before nearly two thousand members and guests of the Merchants' Association of New York by L. A. Hawkins, executive engineer, and E. L. Manning, physicist, of the research laboratory of the General Electric Company.

One of the effects that the cathode-ray tube produces is to cause some substances to become brightly fluorescent, or to give off light even after the raying has been stopped. Different colors of light are produced by different substances, and different colors are also produced by a substance at different temperatures.

The cathode-ray apparatus occupied too much space to be transported readily from Schenectady to the luncheon meeting, so instead, a strip of fluorescent screen material was subjected to a cathode-ray bombardment in the Schenectady laboratory. The material was then placed in a vacuum bottle containing liquid air, and in that condition carried to New York. When the screen was removed from the liquid air at the meeting, it could not be seen in the darkened room. But as it warmed up, it began to glow with a deep yellow tint. It became warmer, and the glow became purple. As it continued to warm up to room temperature it continued to glow in different hues, with waves of colors sweeping across the small screen in much the same way as the Northern Lights sweep across the sky on cold nights.

N. E. M. A. PUBLISHES DATA ON MOTOR STANDARDS

A NEW book of motor and generator standards has just been published by the National Electrical Manufacturers' Association. This book is a valuable reference work of practical information on the manufacture, test, performance and application of alternating and direct current motors and generators, frequency converters and motor-generator sets of small and large power capacities.

The volume contains over 550 rules dealing with rating, performance, manu-

facturing, application and commercial considerations. It also contains a large section devoted to the definitions of electrical terms and abbreviations met with in the motor and generator industry.

Much of the material is entirely new, including ratings for large power d-c motors and elevator motors, minimum efficiencies and indicated starting currents for fractional horsepower motors, ratings and specification forms for a-c generators, definitions for squirrel-cage and other motors and the Department of Commerce simplified practice recommendations on carbon brush sizes. Four entirely new sections have been added.

A large number of tables have been added for the first time covering Standard horsepower and speed ratings and standard compressor applications and factors for large direct driving synchronous motors.

An entire section is devoted to the Standard Method of connections and marking of terminals for the various types of motors and generators covered by the book.

The book is 8 by 10½ in. in size and has 132 pages and is bound in usual NEMA brown linen covers. It may be obtained from the National Electrical Manufacturers' Association, 420 Lexington Ave., New York, N. Y., at \$1.50 per copy.

EXPORT SHIPMENTS OF ELECTRIC REFRIGERATORS

September Shipments Reported by the Bureau of Foreign and Domestic Commerce

	Electric Household Refrigerators	Commercial Refrigerators Up to 1 Ton
	No. Val.	No. Val.
Belgium	204 21,655	28 5,651
Czechoslovakia ..	25 761	.. ..
Denmark	14 1,035	7 565
Finland	19 1,749	.. ..
France	11 1,525	12 2,531
Germany	31 3,518	.. ..
Irish Free State ..	7 436	.. ..
Italy	11 975	16 1,833
Netherlands	24 2,350	6 654
Norway	3 310	.. ..
Portugal	4 727	.. ..
Rumania	7 698	.. ..
Soviet Russia in Europe	1 209	.. ..
Spain	27 4,516	.. ..
Sweden	25 1,359	.. ..
Switzerland	28 3,091	7 1,181
United Kingdom ..	240 13,042	19 1,077
Canada	516 63,483	61 11,280
Costa Rica	2 708	.. ..
Guatemala	1 238	.. ..
Honduras	3 795	.. ..
Nicaragua	11 1,901	.. ..
Panama	35 7,147	.. ..
Salvador	2 353	.. ..
Mexico	38 8,963	10 2,332
Bermudas	13 1,685	2 302
Barbados	3 574	.. ..
Jamaica	5 1,188	1 370
Other British West Indies ..	18 2,583	.. ..
Cuba	279 47,107	54 11,985
Dominican Republic ..	7 941	1 463
Netherlands West Indies ..	6 2,213	.. ..
Haiti, Republic of ..	5 882	2 257
Virgin Islands of U. S.	1 629	.. ..
Argentina	216 25,742	46 29,841
Bolivia	1 367	.. ..
Brazil	80 7,567	18 3,439
Chile	187 21,729	.. ..
Colombia	87 15,161	4 2,422
Peru	6 619	2 543
Uruguay	94 6,749	12 2,537
Venezuela	64 8,517	4 1,922
Aden	8 1,234	.. ..
British India	4 1,296	5 849
British Malaya	8 1,325	5 1,654
Ceylon	9 2,348	.. ..
China	5 606	3 1,532
Java and Madura ..	22 1,963	.. ..
Other Netherlands East Indies ..	6 848	.. ..
Hong Kong .....	.. ..	1 361
Japan	21 3,301	10 1,737
Palestine	1 169	.. ..
Philippine Islands ..	16 2,692	.. ..
Syria	1 113	.. ..
Turkey	10 1,174	.. ..
Australia	29 2,102	12 5,186
New Zealand	22 1,827	8 1,402
British East Africa	3 844	.. ..
Union of South Africa	244 34,379	3 430
Gold Coast	32 4,089	.. ..
Nigeria	5 2,436	.. ..
Egypt	51 4,262	.. ..
Algeria and Tunisia ..	2 193	.. ..
Morocco	15 1,776	.. ..
Mozambique	18 2,866	.. ..
Total	2,893 \$357,640	359 \$94,316
Shipments to—		
Hawaii	125 \$ 21,611	5 \$ 1,260
Porto Rico	45 \$ 9,802	1 \$ 119

STORZ CO. WINS HONOR FOURTH TIME

Omaha, Neb.—For the fourth consecutive time the Storz Electrical Refrigeration Co., Omaha, has won the General Electric distributor's prize for volume of sales in this territory. Arthur C. Storz, president, was presented with an oil painting valued at \$500. This painting represents a small child enjoying an afternoon party, with her pet dog and best doll, while the child's mother is serving the many dainties made possible with electric refrigeration. The picture is on display at the sales rooms of the Storz company, 1818 Douglas Street.

SERVICE HINTS

By FRANK W. GRAY

AN accumulation of used cooling coils, removed from jobs for one reason or another, is frequently found in refrigeration service shops. These coils usually come out of jobs in a tarnished and corroded condition. The application of a little cleaning solvent and steel wool will do wonders in renewing the finish of such coils. They may be made to look like new by re-tinning—an operation which costs very little.

Every service man should include in his kit a package of quick-hardening plaster. This plaster comes in the form of a powder which, when mixed with a little water, forms a smooth white paste. This paste hardens quickly and permanently, and may be used to seal up cracks, ragged holes in refrigerators or walls, and in the finishing of numerous other construction details to complete a workmanlike job.

Many expensive leaks are caused by lack of care in making flares in copper tubing, and in properly setting up flare connections. A flare joint depends for its seal upon the thin copper gasket formed by the tension of the flared end of the tubing tightened between the machined brass facings of the male and female couplings. If the flare connection is carelessly jerked up too tightly with the wrench, the copper flange is crushed and a leak is apt to result. When it becomes necessary to uncouple and tighten up a flare joint several times, a new flare should be made in the tubing, for the copper gasket will have lost its elasticity and no tight seal can be made. The expert service man sets up his flares with a smooth turn of the wrench, feeling for the proper degree of tension which will seal his joint.

In hanging apartment house cooling units of the flooded or "boiler" type, the front of the coil should be bracketed slightly higher than the rear. This slight tilting insures more positive action of the needle valves and helps to prevent frosting back on the suction line.

When installing multiple systems in high buildings, or where lateral runs in excess of one hundred feet are needed, larger tubing should be used in both liquid and suction lines. Slightly larger tubing in the liquid line insures an ample supply of the liquid refrigerant at the cooling units furthest from the compressor. Larger suction line tubing lowers the factor of friction loss, which sometimes causes a compressor to pull a vacuum where the lines are greatly extended in a job of this type.

A roll of Celotex insulation padding is a useful addition to the equipment in the commercial service truck. Where it is necessary to add extra insulation to the roof of a meat cooler, in the walls of a poorly insulated box, etc., at a minimum of time and expense, this padding may be quickly applied.

Electric fans have sometimes been installed with commercial cooling units to accelerate air circulation. It has been claimed that by this method heavy frosting of the cooling units is prevented. Such fan installations are not only unnecessary (being a practical admission of poor service engineering), but actually increase dehydration of foodstuffs to an alarming degree. If refrigerators are correctly baffled for air circulation, and commercial cooling coils with sufficient vertical surface area are used, no artificial defrosting devices will be necessary.

When it becomes necessary to remove the float ball assembly from a boiler in an operating system, the entire cooling coil should be thoroughly defrosted with hot water first. Otherwise the cold internal parts will quickly frost up in the open air, thus introducing moisture into the system when the coil is reassembled.

When service men go out to work on domestic refrigerators, they are very apt to leave grease or dirt stains on the interior and exterior finishes of the cabinets. A can of cleaning compound—of which there are several kinds on the market—should be included with the service kit. A shining clean refrigerator will enlist the good will of many a housewife.

Service men often carry their pressure gauges thrown indiscriminately into their tool kits with other heavy tools. The pressure gauge is the barometer for testing operation, and for making accurate adjustments. Inaccurate gauges usually result in extra service calls and poor operation. Gauges should be carefully packed and handled, and should be tested against a master gauge at frequent intervals.

New HOTEL ADDISON

Featuring Comfort Quality and Service
450 ROOMS of REAL COMFORT

\$2.00 A DAY
Special weekly and monthly rates

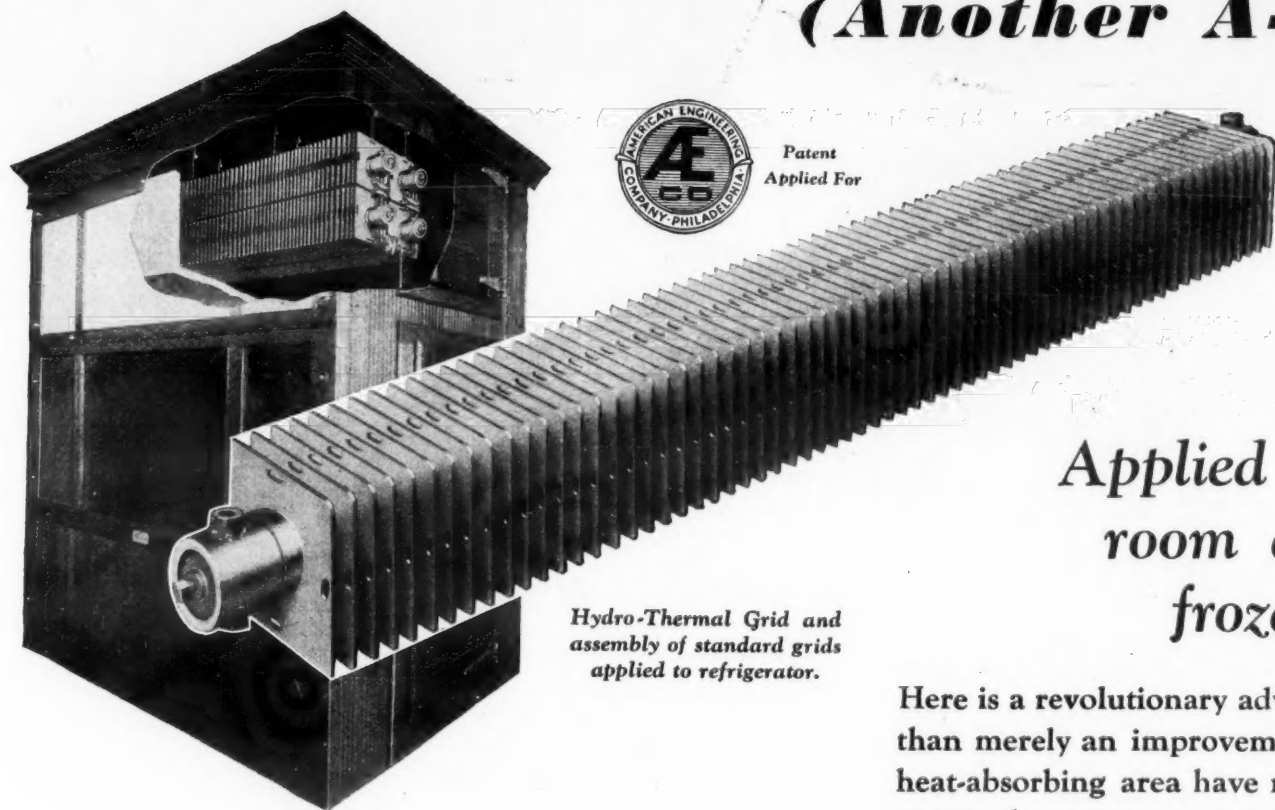
DETROIT
WOODWARD AT CHARLOTTE

L. MCGREGOR
Manager

Announcing ~

Hydro-Thermal Grids

(Another A-E-CO. Product)



For Ammonia and Methyl Chloride Systems

Applied to refrigerators, coolers,
room cooling, display cases,
frozen food cabinets, etc.

24 Advantages

1. An entirely new development in modern refrigerating equipment.
2. Advantages of the "Finned Coil" and "Sectional Coil" combined in one.
3. Completely standardized.
4. Designed for "over-the-counter" delivery and easy assembly.
5. Flexible for assembly into any size or shape "low side" cooling unit.
6. Maximum number of "low side" assembly combinations from minimum stock numbers.
7. Dispenses with special engineering and special manufacturing for each "low side" requirement.
8. Any part of assembled "low side" may be replaced without loss or damage to remainder of assembly.
9. Greatest heat-absorbing capacity in minimum bunker space.
10. Brine hold-over when desired at no extra cost.
11. Releases bunker space for greater storage space.
12. Permits free circulation of air.
13. Defrosts each cycle for fresh food temperature requirements.
14. Moisture evaporates from coils back into the air.
15. Minimum dehydration of foods.
16. Clean surface reduces operating cost.
17. Full flooded or dry gas system.
18. Reduces amount of refrigerant required.
19. Shortest travel of heat-laden expanded gas.
20. Made from best grade seamless steel tubing and — steel grids.
21. Volume production with special machines, tools and dies.
22. Fins fitted to tubes with automatic hydraulic machine, insuring perfect bond for rapid heat transfer.
23. All grids heavily galvanized and rust-proof.
24. Lowest price for equal heat absorbing capacity.

Full information supplied to dealers in methyl chloride and ammonia machines and to refrigerator manufacturers.

Here is a revolutionary advance in refrigeration. The Hydro-Thermal Grid is more than merely an improvement in refrigerating coils . . . its unique design and large heat-absorbing area have made possible an entirely new kind of refrigeration . . . a system that operates at temperatures only a few degrees below those you desire in your refrigerator or display case.

The Hydro-Thermal Grid is a tube within a tube. The outer tube is fitted with heat-absorbing fins. In the space between the tubes, the refrigerant is spread out in a thin layer for maximum cooling effect. The inner tube may be used for brine hold-over, if desired.

Because of the liberal surface and the comparatively higher temperatures at which the refrigerant can be carried, the Hydro-Thermal Grid collects only a thin layer of frost when applied at temperatures required for fresh foods. It takes the place of the excessively cold coil that encases itself in a heavy layer of frozen moisture drawn from meats and other food products. What frost there is, disappears entirely between operating periods of the machine, eliminating periodic defrosting and providing for the first time a refrigerating system that is truly and completely automatic.

When used for frozen foods and other low temperature applications, the small amount of frost formed is easily removed at intervals, if necessary.

Instead of traveling through a long coil, the cooling gas fairly flashes through these units.

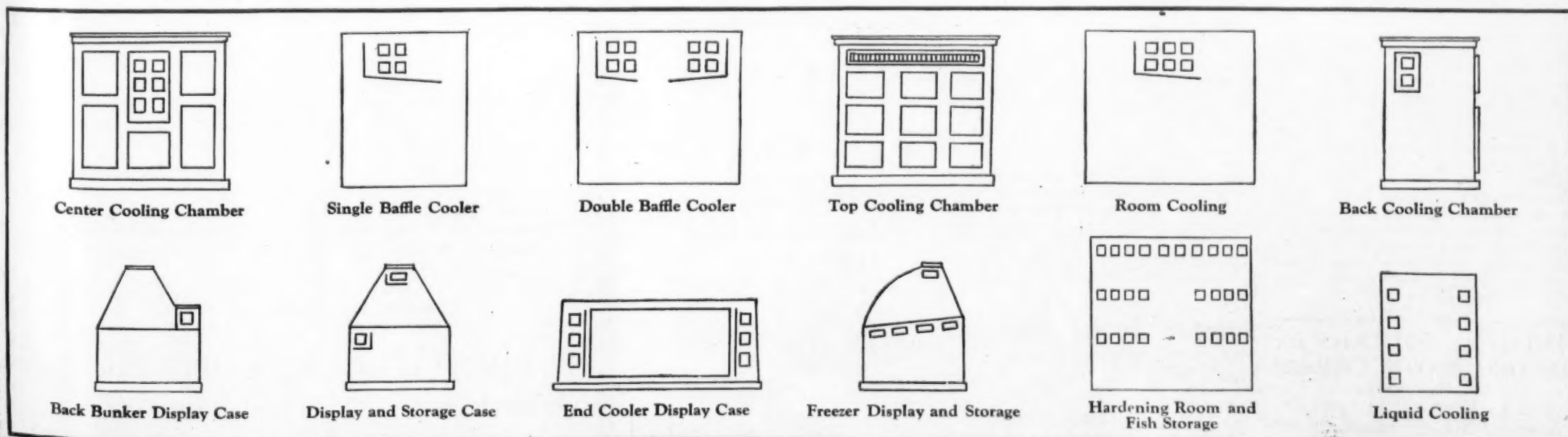
The combination of great heat-absorbing area, large surface exposed to the refrigerant and short gas travel provides almost unbelievable refrigerating effect in minimum space.

For the busy shop, where refrigerator and cases are constantly being opened and heavy pieces of meat are being hung in the refrigerator to be chilled, Hydro-Thermal Grids supply cold quickly . . . plenty of it . . . when you need it . . . as you need it.

Assemblies from standard grids eliminate special engineering;
make possible "over-the-counter" selling

Hydro-Thermal Grids are made in three sizes—8 x 8 inches, 6 x 6 inches and 3½ x 6 inches—in a range of convenient stock lengths and welded assemblies. Other lengths can be supplied on order. From standard grids, which may be carried in stock, "low sides" of any desired shape and size can be easily and quickly assembled—a truly "over-the-counter" service—a money-making, trade-building proposition for the dealer.

AMERICAN ENGINEERING COMPANY
2420 ARAMINGO AVENUE : : : : PHILADELPHIA, PA.



LITERATURE OF MANUFACTURERS

Catalogues, bulletins and other material recently issued.

Manufacturers are requested to send copies of new trade literature to Electric Refrigeration News.

Kelvinator

The new 1931 Kelvinators are presented in an attractive, well arranged folder which has been prepared by the Kelvinator Corp., Detroit. In the Kelvinator domestic line-up there are two Yukon models, five De Luxe models and three Standard models. Legs are standard equipment with the Yukon models but may be had as accessories with all other models. Innovations in Kelvinator line, such as Iso-Thermic tubes, Frost Chest, Kold Keeper, Kelvin Crisper, Kelvin Cooler, bar type shelves, lighted interior, hardware and temperature selector are described fully in the folder.

United Cork

The 1931 edition of United Cork's new Insulation Handbook has just been issued. Information in the new handbook consists of technical data, construction methods, insulation details, blue print specifications and manufacturer's catalogue data. Copies of this handbook may be had by writing to the United Cork Companies, Lyndhurst, N. J.

Westinghouse

The Westinghouse Electric & Manufacturing Company, East Springfield, Mass., has recently issued a new 16-page publication, designated as Circular 1883, covering the various types of Westinghouse small power motors.

In addition to the text describing the motors, the booklet contains many illustrations showing construction details of the motors, their external appearance, and some of their many applications.

REQUESTS FOR INFORMATION

Readers who can be of assistance in furnishing correct answers to inquiries, or who can supply additional information, are invited to address Electric Refrigeration News, mentioning query number.

Estimating

Query No. 394—"Please advise where I can procure a manual covering the estimating of all classes of commercial jobs."

Compressors

Query No. 395—"We are interested in purchasing in your country sulphur dioxide compressors for assembling commercial units from 1/2 to 2 h.p. We shall be obliged if you are able to put us in touch with manufacturers of same, suggesting to them to write to us directly, giving specifications and prices."

"We are manufacturers of frost units and commercial cabinets and shall be, next year, in a position to require from 300 to 500 compressors. We are interested in compressors only and not in compressor units."

Replacement Parts

Query No. 396—"Please inform us if there is a concern or concerns specializing in the manufacture and sale of replacement parts for standard makes of domestic and commercial electric refrigeration units."

Foreign Business

Query No. 397—"Some of our foreign offices have reported a growing interest in their territories for refrigeration units to be attached to the better grades of ice boxes now in use. In one case, we have a definite request for prices for such units, and we would like to advise our foreign office of a reputable firm that could supply this product."

MINNEAPOLIS WORKING ON SAFETY CODE

Minneapolis, Minn.—James G. Houghton, inspector of buildings, and Charles A. Johnson, chief of the fire prevention bureau, are planning to submit to the Minneapolis Council committee on Wednesday, December 17th, a proposed ordinance regulating the installation, repair, operation and maintenance of refrigeration systems in the city of Minneapolis.

The proposed ordinance follows along the lines of the code sponsored by the American Society of Refrigerating Engineers and recently approved by the American Standards Association. Added provisions cover license, permits, fees, violations penalties, and validity.

FILTRINE FILTERS for ELECTRIC WATER COOLERS

GUARANTEED
FILTRINE MFG. CO.
49 LEXINGTON AVE. - BROOKLYN, N.Y.
Manufacturers of filters and coolers in all sizes.

Westinghouse Presents 1931 Sales Plans



(Concluded from Page 1, Column 4)

tial market for Westinghouse refrigerators. W. B. Henri, president of Henri, Hurst, McDonald, Chicago advertising agency, showed 1931 national advertising proofs, as well as newspaper and direct mail plans.

Ralph Holgerson, manager of the commercial refrigeration department, then told what had been and would be developed along commercial lines. J. F. "Donneil, sales supervisor, spoke of the duties of his district sales supervisors, whom he called "shock troops," and outlined the best method of distributor and dealer co-operation.

R. L. Samner, educational director, spoke on "Opening Closed Doors." He told how to hire, train and develop good salesmen. He outlined the manner in which the greatly augmented educational department will aid distributors and dealers during 1931. He also explained how the home economics department is vitally important in distributor and dealer setups. W. N. Kennon, advertising contact man, outlined 1931 advertising plans in detail.

George W. Moister, sales promotion manager, spoke on "Human Institution, Intimate Product, Personal Presentation." He explained the importance of educational work with prospects, the human treatment method of selling and the importance of a facile, well balanced retail sales organization. C. B. Graves, sales department, spoke on the subject, "Directed Shots." He outlined the principles of good retailing and the potential market for refrigerators. A. L. Dietz, vice-president of the Commercial Investment Trust Corp., spoke on the finance plans.

R. J. Wensley, refrigeration engineering department, then explained the strict standards that govern Westinghouse engineers, and reviewed the history of the twelve-year development of the Westinghouse refrigerator. L. K. Baxter, service manager, spoke on the type of personnel necessary for distributors' and dealers' service men, and outlined plans for service schools in 1931.

A banquet at the Mansfield-Leland Hotel was held at seven o'clock. E. H. Sniffin, assistant to the vice-president of the Westinghouse Electric & Manufacturing Co., spoke on "The Westinghouse Spirit." He reviewed inspiring the history of the Westinghouse Company, and cited interesting anecdotes of his personal acquaintance with the late George Westinghouse, founder.

Nathaniel Elin, of the Elin Co., Newark, N. J., then spoke for the newer distributors, and A. Goldenberg, of the American Radio Distributing Co., Zanesville and Columbus, Ohio, replied for the pioneer distributors. Other distributors were called on and spoke briefly.

Carl Taylor closed the banquet with a tribute to the distributors present and the Westinghouse refrigerator.

Those present from distributor organizations were:

Louisville, Ky. Tafel-Williams, Inc. Tom M. Williams, Paul Tafel.

Syracuse, N. Y. Westinghouse Electric Supply Co., H. L. Layner.

Newark, N. J. The Elin Co., Nathaniel Elin, Robert Friedel.

New York, N. Y. Times Appliance Co., Jerome R. Rockhill, W. Jockers, E. A. Bonneville, Willard Hall, E. B. Ingraham, B. A. Allen, Robert E. Hill.

Scranton, Pa. Penn Electrical Engineering Co., Anthracite Refrigerator Co., G. P. Smith, R. O. Hale.

Huntington, W. Va. Van Zant Supply Co., C. L. Van Zant, C. P. Flanagan.

Pittsburgh, Pa. Iron City Electric Co., Whitehill & Danforth, Inc., A. H. Rogers, Calvin H. Robie, M. S. Kinner, J. W. Doanes, W. J. Loeffler, Robert G. Eckhardt, William K. Wilson, W. M. Kline, W. I. Bickford, Elmer Whitehill.

Washington, D. C. Edgar Morris Sales Co., George F. Kindley.

Chicago, Ill. Frank H. Johnson, Son & Crown, Inc., Frank H. Johnson, S. N. Crowen, Geo. R. Johnson.

Zanesville, Ohio. American Refrigerator Distributing Co., American Radio Distributing Co., E. P. Mercer, A. Goldenberg, T. E. Goldenberg.

Toledo, Ohio. Westinghouse Electric Supply Co., W. R. Vivian, Walter S. Bissell.

New Haven, Conn. Connecticut Electric Refrigerating Co., A. W. Chase, Norman K. Fuller.

Attention Service Managers

When you need mechanics, installers and service men—men practically trained in Electric Refrigeration work—call on us. We can furnish qualified graduates to meet your specifications. No charge to you or to them. Write, wire or phone.

THE NATIONAL TECH
Where men learn by doing—not by correspondence
902 Ulmer Bldg., Cleveland, Ohio

Baltimore, Md. Parks & Hull, Bernard W. Carey, S. Gordon T. Parks.
Philadelphia, Pa. Westinghouse Electric Supply Co., Davison Refrigerator Co., Harry Gansman, S. L. Davison, S. N. Davison, F. J. Schmidt, A. C. Hopkins.

Detroit, Mich. Westinghouse Electric Supply Co., H. A. Pollock, C. E. Ludovici, E. B. Hallahan.

Rochester, N. Y. Westinghouse Electric Supply Co., F. L. Walton.

Cleveland, Ohio. Westinghouse Elec. Supply Co., Danforth Refrigerator Co., N. M. Forsythe, Robert O. Brannen, F. M. Warburton, M. M. Little, M. L. Neckerson, James Sidway, I. W. Danforth.

Boston, Mass. Wetmore-Savage Elec. Supply Co., Buckley & Scott Utilities, Inc., Russell L. Jones, Wesley E. Downing, T. G. Phillips, John W. Scott, R. P. Wise.

Milwaukee, Wis. Westinghouse Elec. Supply Co., J. C. Schmidbauer.

Buffalo, N. Y. McCarthy Bros. & Ford, Karr Parker.

MORRELL AND McMILLAN JOIN KELVINATOR

Detroit, Mich.—Changes in the staffs at the Kelvinator branches in Cleveland and Philadelphia were recently made by the Kelvinator Corp. W. F. Morrell, formerly of the Barber Asphalt Co., of Philadelphia, has been named manager of the branch at Cleveland. Mr. Morrell was formerly director of sales for the Iroquois Electric Refrigeration Co.

A. L. McMillan is the new domestic sales manager of the Philadelphia branch, succeeding A. L. Schluttig. For the last three and a half years Mr. McMillan has been manager of the domestic electric refrigeration department of the Philadelphia Electric Co. He is chairman of the Philadelphia Section of the American Society of Refrigeration Engineers, and also chairman of the Refrigeration Division of the Electric Association of Philadelphia.

KEROTEST VALVES OKAYED BY UNDERWRITERS

Chicago, Ill.—The Underwriters' Laboratories have recently approved eight types of Kerotest packless and packed valves, which were tested for fire and accident hazard. The valves which were approved were Types 295, 296, 395, 396, 405, 406, 415 and 416.

DOHERTY SALES PASS 7,000 UNIT MARK

New York, N. Y.—During the month of October, 307 domestic and commercial electric refrigerators were added to the lines of the subsidiaries of Henry L. Doherty & Co. Total sales of refrigerators for the first ten months of this year reached a total of 7,537 units.

MANUFACTURER will sell at very attractive prices high-grade Refrigeration Compressors and Expanders. Suitable for domestic and small commercial purposes. Address Box 299.

FOR SALE: We will sell at a very attractive price whole or parts of the following: Larkin Coils, Zerozone Coils, Ecco Water Cooler and Zerozone Electric Signs. For list and prices of materials communicate with THE ELIN COMPANY, 330 Washington Street, Newark, New Jersey.

ATTENTION

Distributors and Dealers

COPELAND

Dependable

ELECTRIC Refrigeration

Your Opportunity to Save \$25 to \$150

on brand-new fully guaranteed COPELANDS. Immediate delivery from stock. All models. Stock subject to prior sale. Write or wire at once.

SCHIMMEL
ELECTRIC SUPPLY CO.
326 Arch St. - PHILADELPHIA, PA.

THE CONDENSER

ADVERTISING RATE fifty cents per line (this column only).

SPECIAL RATE if paid in advance—Positions Wanted—fifty words or less, one insertion \$2.00, additional words four cents each. Three insertions \$5.00, additional words ten cents each. All other classifications—fifty words or less, one insertion \$3.00, additional words six cents each. Three insertions \$8.00, additional words sixteen cents each.

POSITIONS AVAILABLE

WANTED—Electric refrigeration laboratory assistant for conducting tests. Must have technical knowledge and laboratory experience in the household field. Young single man preferred. State age, experience, and salary expected. Box 302.

FRIGIDAIRE dealer wants experienced household supervisor for Berkshire County, 100,000 population. L. R. Sweatland, Inc., 101 South Street, Pittsfield, Mass.

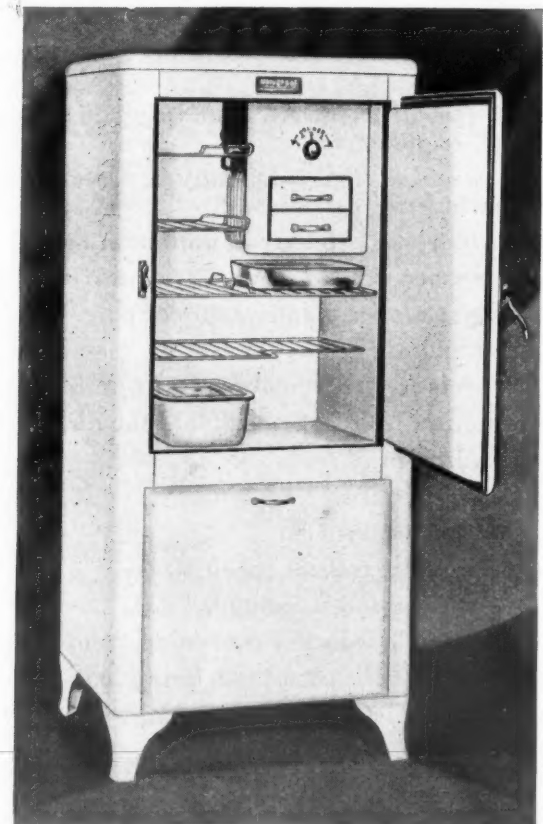
POSITIONS WANTED

SERVICE and Installation Manager available. Three years' electrical experience. Seven years with one Frigidaire dealer; has working knowledge of other machines; also experience in Household and Commercial Sales. Student Utilities Engineering Institute, Chicago. References supplied. Box 295.

BUSINESS OPPORTUNITIES

REFRIGERATION Sales Managers and Salesmen, Take Notice. A wonderful opportunity to go in business with no investment. All you furnish is your services. You organize your own sales force. You will receive the commissions on all sales made by you or your salesmen. You pay salesmen whatever you want. We will furnish a complete line of new Servel commercial machines, display, advertising, installation, service, engineering, and finance all deals. All you finance is your sales force. Write or call Pittsburgh Refrigeration Company, 1115 Penn Avenue, Pittsburgh, Pa.

The UNIVERSAL Line of Cabinets is unusually complete



THE cabinet shown here is the 5 cu. ft. model of the new Universal Line of self-contained Cabinets which includes models of 4, 5, 6 and 7 cu. ft. net capacities. These cabinets have well arranged shelf areas which measure from 8.1 to 12.5 sq. ft., respectively, and possess every desirable feature, including the Refresh-O-Pan, cold control, porcelain interior, massive chromium-plated hardware, one rubber tray and 5-inch legs. These new models are fitting containers for the ever sturdy, dependable and economical Universal Refrigerating Units and are being offered at unusually attractive prices as leaders to a complete line of self-contained and remote cabinets for household and commercial installations.

Complete information on request.

Universal Cooler Corporation

Detroit, Mich. - - - Windsor, Ontario, Canada

ELECTRIC REFRIGERATION NEWS

Registered U. S. Patent Office.

The business newspaper of the refrigeration industry

ISSUED EVERY TWO WEEKS
VOL. 5, No. 8, SERIAL NO. 110

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Business News Pub. Co.

DETROIT, MICHIGAN, DECEMBER 17, 1930

Entered as second class matter
Aug. 1, 1927, at Detroit, Mich.

FIFTEEN CENTS PER COPY
TWO DOLLARS PER YEAR

FROZEN MEAT SOLD IN DRUG STORE



Henry Bluestone, far-seeing proprietor of Pittsburgh drug store, selling Swift's meats to feminine customer

EXPERTS

Talk on Frozen Fruits and Vegetables in New York

New York, N. Y.—Following the excellent example which it set itself last June when it held an open meeting for the discussion of frozen meats, the New York Food Marketing Research Council conducted a similar meeting on December 9th, at which frozen fruits and vegetables were made the subject matter of talks by eight speakers. The meeting, which was held in the Home Making Center of the Grand Central Palace, was attended by more than 200 persons, most of whom enjoyed a lunch composed principally of quick-frozen products between the morning and afternoon sessions. The only reason why everyone present did not attend the luncheon was because the number who desired to try the quick-frozen products was far in excess of the reservations previously made, and there was not food enough for all. Nearly all of the speakers were men who have been closely identified with the particular phase of the development of quick-frozen products on which they spoke, and various angles were discussed by such leaders in the field as Clarence Birdseye, C. V. Hill, W. R. Tucker, and Horace M. Wigney. Professor R. S. Alexander, of Columbia University, presided. At the conclusion of the speeches on specific subjects, William Jabine, editor of *ELECTRIC REFRIGERATION NEWS*, reviewed some of the points made by the previous speakers, and suggested that possibly the time was ripe for the formation of an association that could co-ordinate quick freezing activities, eliminate duplication of effort, especially duplication of research, set standards of quality that would serve to keep out inferior products, and tackle the objectionable legislation now on the statute books which bids fair to hamper the new industry as it develops.

The first scheduled speaker was H. W. Ullsperger, of the Fruit Growers' Union, Sturgeon Bay, Wisconsin. He was preceded by Leonard P. Beebe, of Columbia University, who briefly outlined the present quick freezing situation. Mr. Ullsperger is in charge of a co-operative organization which has been freezing cherries since 1922, and spoke from eight years of practical experience. He quoted figures showing that in 1930 his organization handled 17,000,000 pounds of cherries, and that of this quantity 750,000 lbs. were sold as fresh fruit, 8,000,000 lbs. as frozen fruit, and 9,000,000 lbs. as canned fruit. Only five years

(Continued on Page 6, Column 1)

To the Merchant

TO the merchandiser of food who is anxious to embark on the sale of quick frozen products, this issue of the *Refrigerated Food section* should be of particular value. On this page, and on Page 3, are photographs suitable for pasting up in his store, which put an emphasis on the cleanliness and convenience of quick frozen packaged meats.

The appeal of sanitation undoubtedly will do more to promote the nation-wide sale of quick frozen foods than any other factor. Here is a chance for the alert merchant to use these photographs plus a little observation to discover what his customers think about this great new development.

HE'S RIGHT

Chicago, Nov. 29.—(U. P.)—The modern drug store, which dispenses bathing suits, toys and books as well as drugs, soon will sell choice cuts of meat, James R. Willey, of Purdue University, president of the American Society of Animal Production, predicted in a lecture before the society's annual convention.

Pittsburgh Pharmacy First To Seize Great Opportunity

Pittsburgh, Pa.—Ever since quick-frozen packaged meats were first discussed as a practical and marketable product, the enthusiasts have predicted that the time would come when meats could be bought in the corner drug store. So far as Pittsburgh is concerned, that time has come.

An enterprising druggist, an enterprising producer of frozen meats, and an enterprising refrigeration sales- and followed up this promotional effort by an actual sale. For this Pittsburgh drug store installation is no tentative experiment, undertaken by a refrigeration manufacturer or a producer of quick-frozen foods, with the half-hearted assent of the retail merchant in whose premises the goods are sold. Mr. Bluestone has bought of his own free will an Oreole display and storage case for low temperature work, equipped with a Kelvinator unit, because he believes that he can make money by selling frozen meats in his drug store. So far as the manu-

(Concluded on Page 2, Column 1)

DRUG STORE MEATS

Make Merchandising History

(Concluded from Page 1, Column 5)
facturers are concerned, the transaction is closed.

Before buying his case Mr. Bluestone talked with C. S. Hopkins, local manager for Swift, and was assured that the Swift organization was anxious to push the new products and would supply his need. Since the case was installed that promise has been kept, and daily deliveries as called for have been made by Swift & Company. Mr. Bluestone has displayed the Swift name prominently, both inside his store and in a sign outside on the wall of the building, and says that he believes the national recognition of the Swift name has been a great aid to him in making sales. His long experience as a merchant has taught him the value of nationally advertised names, and for that reason he has placed a high value on the co-operation of the Swift organization.

A Tale of Two Signs

That sign on the outside wall of the store proved the occasion for an unusual incident. About half a mile away, near the East Liberty Station, is another drug store whose proprietor, in common with almost everyone else in that section of the city, heard about Mr. Bluestone's innovation. Soon there appeared on the other store a big sign reading about as follows: "This is a Professional Pharmacy. We Do Not Sell Meats." Just what effect this had in increasing the sales of the man who scorns to sell meats is not known, but one afternoon a lady stopped in Mr. Bluestone's store and asked to see the frozen meats. She explained that she had seen the "We Do Not Sell Meats" sign, had been

puzzled by it, and had asked her husband what it meant. He explained that there was a drug store down at Penn and Negley Avenues that did sell meats, and she lost no time in getting down to look it over. When she left she car-

ried with her meat purchases amounting to \$2.24.

The Pittsburgh newspapers have recognized the fact that food marketing history is being made here, and have published articles and pictures describing

His Initiative Started It



C. E. Rideout of Kelvinator who saw his chance and took it

the store and its meat sales. Throngs of visitors have stopped to see the frozen meats on sale in a drug store, and a goodly proportion of them have made purchases. Sales are not yet as great in volume as Mr. Bluestone would like to have them, but he is well pleased with the progress made thus far, and is proud of the fact that, so far as is known, he is the first druggist in the country to add meats to his varied line of merchandise.

Among the callers, and almost always among the non-purchasers, have been large numbers of Pittsburgh butchers. They rarely announce themselves as such at the outset, but before long the enthusiasm of Mr. Bluestone's sales talk begins to wear them down, and they disclose their identity with a few well directed remarks against the frozen meats. Some of them have shown a more progressive spirit, and by the trend of their questions have indicated that they were considering the selling of the new products themselves in order to keep pace with the times. Shortly after the case was put in, H. H. Eisenbels, sales manager of the commercial division of the Kelvinator-Leonard Corporation, was invited to a meeting of meat retailers, and when the subject of the drug store sales was brought up, found that several of the best known meat retailers in the city rallied to his support. So although there is the expected hue and cry by the unprogressive element among the butchers, it is by no means unanimous among Pittsburgh meat retailers. The live merchants realize that the world moves and are preparing to move with it.

Making the Sale

Mr. Rideout's description of the way the sale was made is interesting. He lives in the neighborhood of the Spalding store (the Spalding name being one that Mr. Bluestone bought with the business), and recently when he read the *Saturday Evening Post* noticed the article by Floyd W. Parsons on the possibilities of refrigeration, and asked Mr. Bluestone to read it. The latter did so, became interested and asked for more. Mr. Rideout obliged with a sheaf of sales literature, including clippings from national magazines on the subject and some material from the Refrigerated Food Section of *ELECTRIC REFRIGERATION NEWS*. Mr. Bluestone read every word, became convinced that now was the time for an up-and-coming merchant to get into this new field, with its vast possibilities, and acted on his conviction.

The visit to the Swift offices followed, and with the assurance that he would have meats to sell, Mr. Bluestone went ahead. The representative of the Ottenheimer Company, maker of the Oreole case, was called in, the order was signed, the case and unit installed on a Friday night, and sales were under way on Saturday.

There is no doubting the fact that Mr. Bluestone is a live merchant and is bent on capitalizing the fact that he is the first druggist to sell meats. He has

given to the Oreole-Kelvinator case the place of honor in his store, on the right as the customer enters. He has had leaflets printed describing the advantages of quick-frozen meats and characterizing the move as revolutionary and "the wonder of the present century." He waits on meat customers himself whenever possible, but is careful to point out that as the weight of each cellophane wrapped package is plainly marked, any of his clerks can sell the meats without difficulty. Many of his steady customers now buy their meats from him and the repeat business has been good. The doctors who are frequent visitors to his store are interested in the meats and nearly all of them have taken some home. One of them came in the other day to see about a prescription, bought a package of meat, put it in his overcoat pocket and walked out. "Imagine a doctor daring to do that with a messy package of fresh meat," was Mr. Bluestone's comment.

Many of the women who come in display a knowledge of quick-frozen meats, saying that they have read about them in their national magazines but have not known where to get them. They are glad of the opportunity to try out a product about which they have read so much.

With free delivery when requested and twenty-four-hour service, Mr. Bluestone expects to continue on his path of progress. Except from the butchers he has heard nothing but praise, and the great volume of favorable comment has added to the reputations of all the organizations and persons responsible for this forward-looking move.

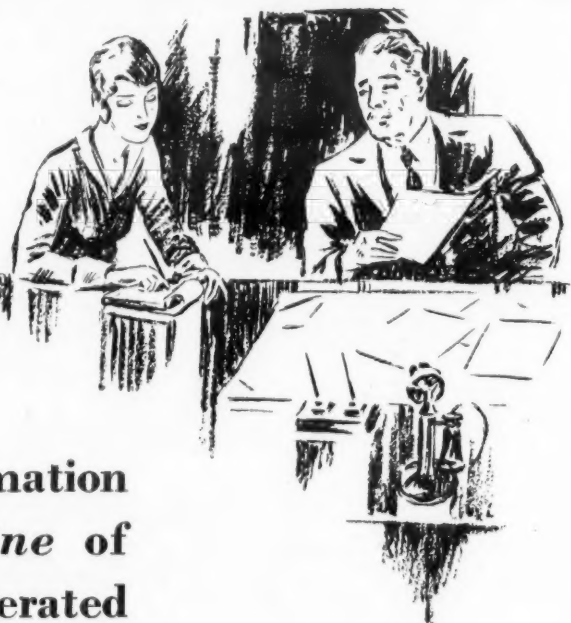
HILL CASE

Newark, N. J.—A new frozen foods display and storage case, employing the Dry Wall System of Refrigeration, has been put on the market by C. V. Hill & Co., of this city. The new case, known as Model 2000, is designed so that products stored in the case compartment can be easily reached, making it unnecessary to sell stock from the display. Large, roomy, metal drawers in the base permit packaged goods to be neatly and compactly stored for quick service.

Defrosting of the Dry Wall System (cold plate) in this case is reduced to the simple operation of scraping the frost off of the plate. This operation requires only a brief space of time and it is not necessary to remove the products from the case. The display is baffled off so that warm air or moisture cannot enter the display compartment or fog up the front glass. Air circulation in the case is reduced to a minimum.

The new case is heavily constructed and insulated for low temperature work. Doors are designed so that they will not swell and allow warm air and moisture to enter the case. The exterior lighting system throws a flood of light on all products in the display.

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The Latest Method of Meat Merchandising

By Swift & Co.'s special process we are now able to have for you the latest in meats. All Cuts—Quick Frosted—individually wrapped in Cellophane—All the goodness of the meat sealed in by the process—Quick sanitary service—displayed in Oreole display case—holding zero temperature—refrigerated with Kelvinator—meats displayed in this gleaming case—in their natural color under cold flood-light illumination—Come and see the wonder of the present century—We are open day and night.

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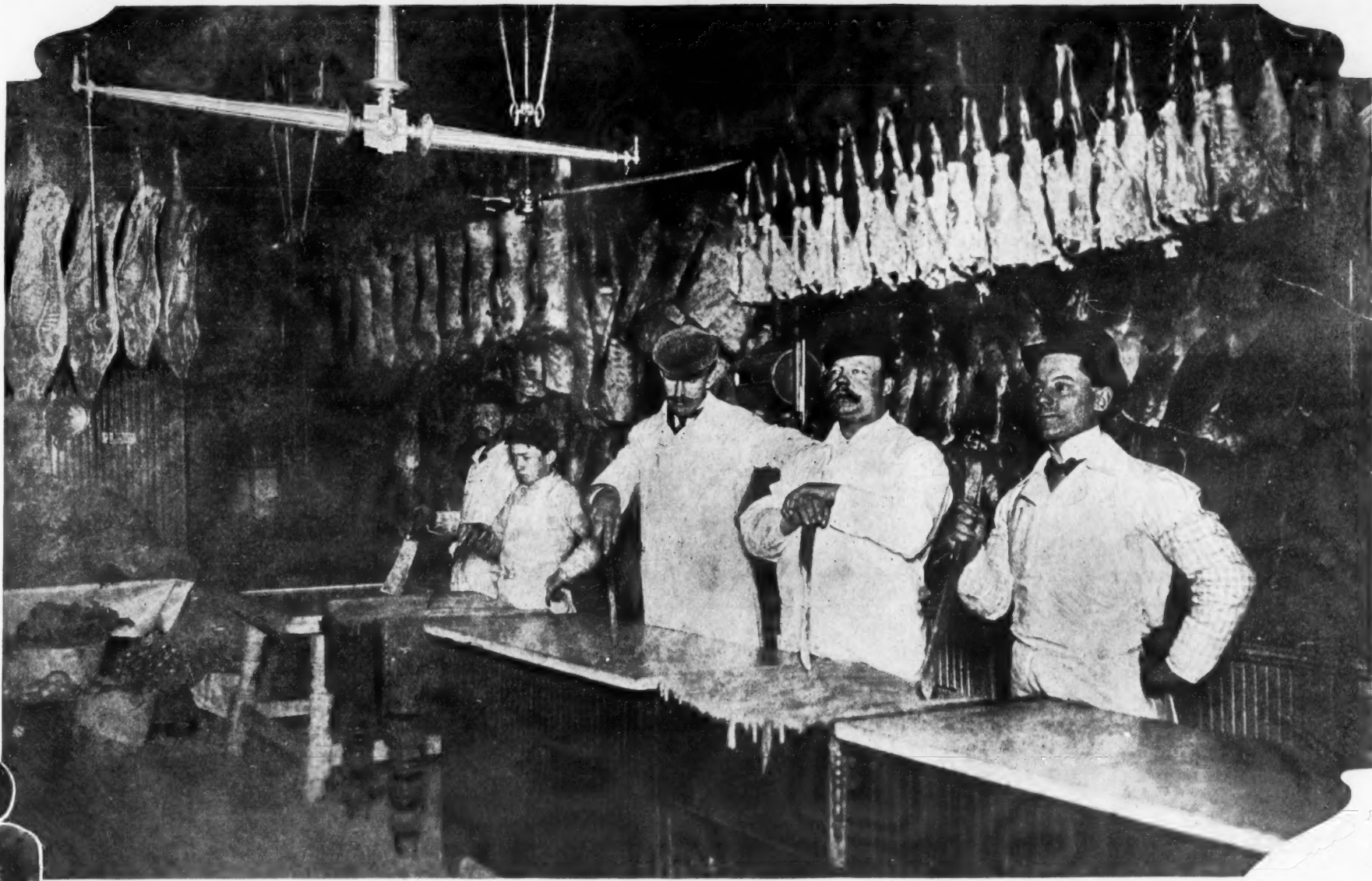
5600 Penn at Negley, Pittsburgh, Pa.

Phone Montrose 3400

We Deliver

Visitors to the Spalding Drug Store take away with them copies of printed announcement which is reproduced above. In this announcement Mr. Bluestone emphasizes several of the talking points which are helping him to sell quick-frozen meats in such an unusual environment.

THE MARCH OF PROGRESS



AT its best, on dress parade, the old-time butcher shop looked anything but inviting. The very nature of the products handled made the butcher's a place to be visited as a matter of necessity rather than choice. Such feeble attempts at sanitation as the sawdust on the floor only served to emphasize the fact that real cleanliness was an impossibility.

The contrast between the two large pictures on

this page tells its own story. The modern market shown below is in Detroit. It is known as the Holbrook market, and includes in its equipment 68 feet of McCray refrigerated display cases.

Then there is the Springfield matron at the left. She is taking home, tucked under her arm, a Birdseye frosted steak. If it were an ordinary piece of meat she would be holding it at arm's length.



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Inevitable

THE sale of frozen meats in a drug store was inevitable. The only doubt was in regard to the identity of the progressive spirits who would be first to take the step. They have now disclosed themselves in Pittsburgh and by their action have served notice that new and logical methods of distribution have invaded one of the most ancient of our industries.

It is fitting that a drug store should undertake the sale of frozen packaged meats. Probably the principal reason why quick-frozen, packaged products have caught the imagination of the public, especially the feminine public, is that they offer an assurance of cleanliness and sanitation that has never been possible in the past. Sanitation always has been associated with the pharmacy; the man who sells medicines, who makes up prescriptions, who is in daily contact with physicians, must make sanitation his watchword or go out of business.

Meats in their ordinary state would have no place in a well kept drug store. No pharmacist jealous of his reputation would let them in. But frozen hard and neatly packaged, they become a sanitary product that belongs where it is now to be found in Pittsburgh, and before long in other drug stores throughout the country.

It took vision on the part of all concerned to take the first step. Henry Bluestone, proprietor of the Spalding store where the meats are being sold, C. E. Rideout, the Kelvinator sales engineer who made the first move, and Swift & Company, producers of the frozen packaged meats are all to be congratulated.

Possibly Swift & Company deserves the most fervent congratulations, for there is no blinking the fact that many of Swift's regular butcher customers in Pittsburgh do not like the idea of letting their business get into other hands, and doubtless will make that fact exceedingly plain to the local Swift organization.

It took real courage for Swift to sell meats to a drug store but it is courage that is sure to be rewarded. The history of the development of quick-frozen foods thus far has brought into prominence two leading producers, Swift and General Foods. Swift has had nationwide distribution of a sort, but General Foods through the Springfield experimental campaign, has gained the greater share of public attention. Just what plans General Foods has made for the future are not yet revealed, but one thing is certain. The General Foods organization is not identified with the retailer of meats, in fact its associations have been distinctly otherwise, and when the time comes to expand, it is most unlikely that the feelings of the butchers will receive much consideration.

For that reason, if for no other, Swift & Company, by putting meats into this Pittsburgh drug store, is making a progressive step that will bring tangible rewards in the future. It would be the height of folly to neglect new outlets and leave the way wide open for General Foods or some other organization to capture them at will. And that would be the inevitable result of such neglect.

What of the poor butcher? What is he going to do when meats are sold in drug stores all over the country? As has been said before in these columns, the butcher who is making money today is making money because he is a good merchant, and not because of his skill as a cutter of meats. He may think that his skill as a meat cutter is duly appreciated by his customers and is responsible for his success, but he is only deceiving himself. If he is an able merchant in these highly competitive days he survives; if not he fails.

And just why a modern, progressive merchant really wants to handle what are commonly known as fresh meats, when he has a chance to sell quick frozen packaged meats, is hard to understand. The new processes eliminate the hardest and messiest parts of his daily work, and remove that indefinite but always expensive item of spoilage. The butcher, or retail meat dealer as he seems to prefer to call himself, who is successful today can be more successful tomorrow if he will keep in step with the progress of the times, and accept the new methods of freezing and packaging meats as an opportunity, not as a disaster.

The world does move. New ideas, new ways of doing things, are inevitable. Right down through the centuries new ways have been fought, and bitterly fought, by those whose status has been affected, and the party which clung to the old methods has always lost. It will be the same old story in the case of frozen packaged foods. Those who fight them will lose sooner or later. Those who recognize in them a new way to advance the progress of sanitation, and increase the convenience of distribution, are sure to win.

In Pittsburgh the die has been cast. The issue is not in doubt.

F. S. Snyder on Economies of Quick Freezing

Q. What advantage will there then be in having separate processing establishments which buy carcasses or larger meat cuts and cut them up and process them into merchantable forms?

A. The advantage, for example, to a large chain store would be the advantage of being able to purchase, as they do now, anywhere in the United States, they taking care to buy where they can to advantage, a carload, for example, of lamb or beef, take it into their own warehouse and put that carload through exactly the same process that the packer would put it through himself, and themselves dispose of their resultant by-product. The advantage to them would be the value of having their own grading and their own brands and their own inspection, as against a slight difference which exists in favor of the packing house, in the fact that the packing house would not ship out the resultant surplus fat and bones which would be shipped under that system. But the difference between treating them in the central warehouse of the same store and the present system would be very great; that is, it would be vastly superior to the present system which even the chain store warehouses have of shipping out their merchandise to a retail store and then bringing back a certain amount of the bones and waste to be treated afterward for a much lower value after that handling than it would have if treated while it was entirely fresh.

Q. Now, that deals with the chain store. How would it affect the processor who does not do retailing himself, such as your own house, for instance?

A. We would not be an illustration, because we already have that equipment.

Q. You have the equipment, but would there not be a loss of economy in the packer slaughtering, putting it up in these processes and then selling first to a wholesale distributor such as yourself and then the wholesaler, in turn, sells it to the retailer?

Control of Brands

A. There would be a slight economy, but in our case it probably would not be as much as the value of having control of our own brands and our own grading.

Q. You mean the slight economy would be in the interest of sending it straight through to the retail organization?

A. The difference in the value of sending the bones and waste, that could be better handled in the packing house and would be worth a little more in the packing house than anywhere else in the United States.

Q. Even with the chain store, would not that saving of bones and other offal be equally existent in the packing house process? That is, the packer cutting up into these cuts and selling in quantities to the chain store, as against the chain store buying in larger quantities and then doing the processing?

A. It is true the primary packer can do it a little bit better than anyone else. But he will apply his own brands and his own grading, and some of the chain stores who are big enough to put in the equipment and who might not otherwise do it will probably prefer to do their own branding and their own grading and take what slight loss there is—and it is not large—between handling the bones and waste themselves as a by-product for the sake of the value to

them of the control of their own brands and their own grading.

Q. In other words, while there would be a slight loss in economy in the chain store doing this, you think, without doing the actual original slaughtering, that would be made up by control of their own brands?

A. It would be, I think, and probably they would consider it good value for the money expended.

Q. So far as processing is concerned, you think there would be an advantage on the side of the one who had the slaughtering and the packing and cutting all together and then sending it straight through?

Looking Into the Future

WITH more than forty years in the food business behind him, Frederick S. Snyder is peculiarly well qualified to discuss the economies which quick freezing of meats and other products will bring about when practised on a large scale. In this, the last of three instalments of Mr. Snyder's testimony in the Packers' Consent Decree hearings in Washington, he talks on such subjects as grocery and chain store costs, new outlets for packaged meats and similar topics.

Previous instalments of Mr. Snyder's interesting testimony concerning quick freezing were printed in the Nov. 19 and Dec. 3 issues of the Refrigerated Food section of Electric Refrigeration News.

A. I should say so, because his basic refrigeration cost would be lower. They are already producing large quantities of refrigeration, and with a booster, they could use their ammonia, especially with the new plate boosters, at very low cost, lower probably than would be realized by the very large store installing its own independent apparatus for the purpose.

Q. You say you do no retailing of your own products?

A. No.

Q. Have you ever considered doing that?

A. I have considered it, yes.

Q. But have not considered it favorably?

A. It has not seemed to me desirable to take it up?

Q. What would be the objection to it?

A. For the reason, if you want to know the reason, it would involve the development, in order to balance and get the overhead spread, of getting into the grocery business, with which I am not familiar. I have some knowledge of the meat business.

Packers As Grocers

Q. You think there is an objection, then, on the part of the packer going into the grocery business, where he is not familiar with the grocery business?

A. No, because he can develop a complete, independent organization if he cares to do so—and he is entirely competent to handle it. They have the advantage of distribution facilities which

are superior to the distribution facilities of any other similar organization in the country.

Q. You say they have superior distribution facilities?

A. Yes, because they cover the country in a network. Armour & Swift together have about a thousand branch houses in the country.

Q. Superior, because of what factors?

A. Rapid movement of perishable products, which would mean a rapid movement of all the products.

Q. In other words, fresh meat is a perishable product, or would you class this quick-frozen meat as a perishable product also?

A. That would come now in the semi-perishable group, less perishable, somewhat, and, of course, totally freed from the question of perishability, substantially, when it is once located in the permanent retail freezer, where it is protected by the temperature.

Q. What are the factors of superiority of the large packers distribution organization that you referred to?

A. Complete merchandising organization, ready to add additional items and spread the overhead, as a result.

Q. Because of their expensive operations?

A. Yes, but not merely are they expensive, but because it is a complete merchandising organization, ready to add additional items with almost no additional cost; relatively small additional cost.

Surplus Branch House Space

Q. You mentioned the number of their branch houses, the great number of their branch houses as being an important factor; because of the surplus branch house space which is available to this business, is that what you mean?

A. Also because they are located at strategic points, the center of service sections to the congested areas of the country.

Q. In mentioning the rapidity of the perishable food movement, your knowledge is that commodities in refrigerator cars, that is, perishable products in refrigerator cars, move much faster than commodities that are less perishable, either in merchandise package service freight or in refrigerator service package freight?

A. Yes, I would expect it would be faster. I am not familiar with the details of the movement, or what would be the movement of their canned goods merchandise in conjunction with their perishable merchandise. But I should suppose it would be accelerated.

Q. So long as it goes in the car containing the perishable commodity?

A. If it went in the same car, it would be accelerated, but I think there are some freight regulations with respect to that which would affect it. I am not familiar with them, however.

Q. To what extent have you been deterred from going into retailing your own products by the fear of alienating the retail dealers who patronize you now? Is that a factor?

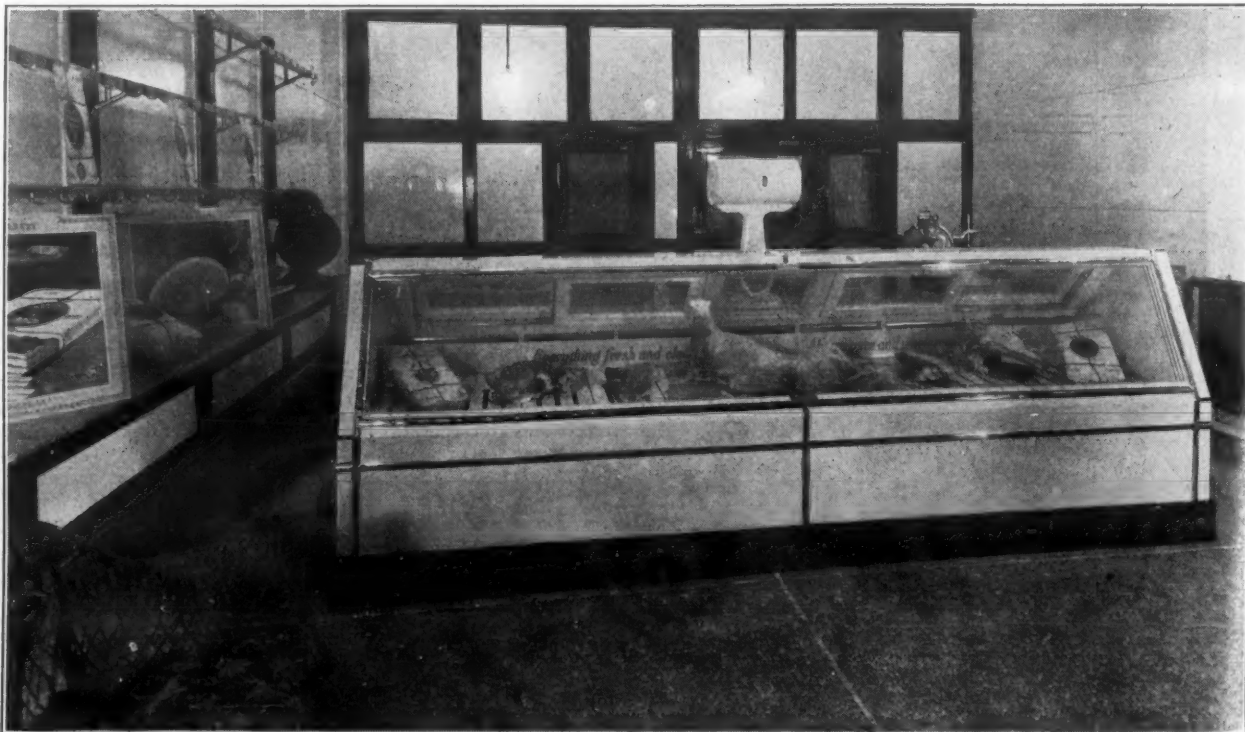
A. I think in our case that has not been a factor. It has been a matter of judgment, that it was not a desirable move. It was better to move in other directions.

Q. In other words, you have not had to consider that factor in your determination against it?

A. No. However, we do have on our

(Continued on Opposite Page)

Buffalo Market Copeland Equipped



Buffalo, N. Y.—The Copeland Distributing Corporation recently made an installation in the Henry & Williamson Meat Market.

Mr. Henry, one of the partners, was for a number of years district manager

of the A. & P. Company, overseeing a number of butcher shops for this company. From his experience he knew that loss from dehydration is a large, unprofitable item, and he resolved to cut it down in his own shop. After the in-

stallation was made he was amazed at the results obtained.

Equipment consists of one Copeland Model X compressor, connected to an 8 x 6 cooler, one 86-C coil and one 10-ft. display case with two 10-T coils.

SNYDER

On Economies of Quick Freezing

(Continued from Opposite Page)

list a couple of thousand retail dealers. It would be a factor, but not a controlling factor.

Q. You mentioned your sales to chain stores, which, I believe, you said constituted about 10 per cent of your business. Do you consider that, or would you consider that, a desirable class of business or a less desirable class?

A. A less desirable class.

Q. Why is that?

A. Because of quantity buying concentrated, with the whole country for a field in which to purchase. The sales price almost always averages lower than it does when the business is more widely distributed. I would much prefer to sell 1,000 persons, \$100 a week, if I were selling \$100,000 worth of goods, than to sell 100 persons \$1,000 a week. I would much rather do that than sell 1 person \$100,000 in a single week, because your foundation is too unstable in that kind of business. On the other hand, it would be equally fatal to sell 100,000 persons \$1 a week, because the cost would kill all possible profit.

Q. That is, the distribution cost. Do you consider the percentage of your business which you have to dispose of or which you do dispose of to chain stores in the sense of a menace to your business?

A. Not a menace. It is merely useful as an overhead spread, very much on the same principle as any added business of that sort which can be brought in at a gross profit which is higher than the inescapable or base cost of business, becomes a spread of the overhead factor.

Q. Let me see if I understand what you mean there. You mean, without the chain store business, you have to distribute all your costs over the existing business?

A. I do.

Q. While you do not make as much profit per unit of sales, for instance, on your chain store business as on other business, at the same time what you do make is a recoupment of so much on your total costs?

A. Quite so.

Q. And even if you find it necessary in some cases to sell to chain stores at a price slightly below your total cost, if that were the case, it would still be a gain, because it would enable you to

make so much recoupment on your fixed charges?

A. Quite correct.

Q. If this quick-freezing process is adopted, there will be less skill required in the retail meat market than is now required, will there not?

A. Yes, so far as the cutter of meat is concerned.

Q. You spoke of the increase in the number of meat markets operated by chain stores?

A. Yes.

Q. Has not that increase, at least to a considerable extent, been caused by the change of form? I mean this: That heretofore, these chain stores have sublet to somebody in their store the right to conduct a retail meat market, and recently they have changed their policy and become the owner of that meat market?

A. My opinion is, from observation, and not from statistics, that not one per cent of them—one per cent of this change, has come about by reason of that. I should think that more than 99 per cent was the result of pure development of the meat business.

For example, the Atlantic & Pacific people have 15,000 or 16,000 stores, and within four years they have developed 4,000 meat stores. I am not aware that they had any stores anywhere in the country which were operated by employees as on a leased basis, as distinguished from their own operation. They may have, but I never heard of it.

Q. Just another question or two. You referred to the fact that the quick-freezing process, considering the whole process together, would enable the placing of meats on the retail counter more cheaply than they can be placed there today?

A. I said as cheap or more cheaply. Of course, the latter is really my opinion. It has not been proven out yet. I am leaving the statement in conservative form.

Q. And a better quality?

A. Better quality, merely because the flavor is preserved at the highest point and the meat is made tender.

Q. I understand you are not able to carry that far enough, to make any estimate as to how much that difference might be?

A. I think it unwise to attempt an estimate so long as it is certain that it is not going to be higher and is probably going to be somewhat lower.

Chain Store Brands

Q. You spoke of the advantage to the chain stores of controlling their own brands. Do you mean that as against other stores that do not control their own brands, or as against other stores who also control their own brands?

A. For example, you will find the A. & P. are selling their own brands of coffee, which they prefer to do, and do their own roasting, and buy their own coffee. As a matter of policy, they consider that good business, and they sell several times as much tonnage of their own brands of coffee as they do of all other brands of coffees combined. I think that illustrates it.

Q. Of course, they were originally a tea and coffee concern, were they not?

A. Yes.

Q. What I have in mind is this: Can you state for the Court's information just what is the advantage of branded goods in their sale and whether that advantage exists as against other branded goods, or chiefly against goods sold without brand designations?

A. That is obvious. That confidence in the mind of a buyer in a brand which has once been purchased and tested and found to be excellent. They go back to it again, because experimentation is unnecessary.

Q. That advantage occurs in comparison with unbranded goods chiefly; how does it occur in comparison with other branded goods?

A. Because until a brand is known and its quality is tested, it is to them a problem. It may be excellent or it may be inferior.

Q. What I mean is, compare Chase and Sanborn's coffee with a bulk coffee that is sold without brand. There the advantages to the brand are obvious, as I understand it?

A. Confidence in that which you are buying and they pay usually something for that insurance of quality.

Q. When the buyer compares one brand with another, that is, Chase and Sanborn's with Maxwell House, then what is the factor of comparison?

A. Judgment, his own judgment of the difference in flavor. One he may prefer to the other, and if so, he afterwards buys the one which he prefers.

Q. In other words, in comparing branded with unbranded commodities, the element of standardness has an appeal to him, whereas in comparing one brand with another brand, there he has to revert again to an examination of its actual quality?

A. In any case, he has to examine it and the unbranded article, the bulk article, he is quite satisfied that it is going to vary from time to time, because there is no special incentive to keep that uniform.

Q. The result, then, is this, that the chief value of a branded article, the chief merchandising value or advantage of a branded article is that there is comparison to an unbranded article rather than a comparison with another equally

advertised branded article of the same sort; is that correct?

A. I think it is. I will say yes to that, because, of course, the difference in brands, the difference between our cure of a ham or bacon and that of Armour or Swift—they are not identical but someone may very much prefer Armour's or Swift's to ours, or the reverse may be the case. Strangely enough, I prefer ours.

Q. That preference depends not upon a difference in the standardness of the quality in either brand, but in a personal taste for one quality or flavor as against another?

A. I am not prepared to admit that, Mr. Teegarden!

Q. What I am particularly interested in is finding out, Mr. Snyder, in view of this peculiar advantage of a branded article as against an unbranded article, rather than as against another branded article of the same popularity and conspicuousness, etc.—would not this advantage to chain stores from the control of their own brands, which you said must be relied upon to make up the difference in processing cost between a chain store purchasing meats wholesale, quick-freezing them, and then retailing them, and a packer's slaughtering and packing in quick-frozen form and sending it through direct to the retailer—would not that advantage in controlling their own brands disappear as against the packer who is also selling brands or branded goods advertised equally broadly?

Competition Between Brands

A. No, it would not disappear. They would probably sell a certain amount of Swift Premium and Armour's Star porterhouse steaks, but they would sell their own, and their own clerks would always press the sale of their own product, with the result that undoubtedly the great bulk of sales would remain in the hands of the brands which they were pressing, rather than the outsiders. That is illustrated with their sales of

hams and bacon today; practically—not a matter of theory, but a matter of demonstration.

By the Court:

Q. As a matter of fact, the same article is frequently sold under different brands?

A. It is, particularly in canned goods. That is not so true of cured hams and bacon. As a rule, that is not the case. But it is universally true with respect to canned goods.

By Mr. Teegarden:

Q. Are you familiar with the general percentages or proportions in which the chain stores sell their own brands for one class, other nationally known brands for another class, and unbranded or bulk goods for a third class?

A. I cannot give you brands or percentages, but I can say from knowledge that the sales of the leading chain stores of their own brands exceed the sales of highly advertised, nationally advertised brands of the same general class of merchandise, produced by others than themselves.

Q. Referring now, Mr. Snyder, to this Birdseye process, as I understand you, that will make it possible for the small independent retailer to handle meats and other foods as satisfactorily as he would now handle his canned goods or coffee?

A. Substantially in the same manner.

Low Temperature Cases

Q. You referred, I believe, Mr. Snyder, to the fact that display cases suitable for showing such products, under the Birdseye patents, were ready for distribution by several manufacturers?

A. An expert refrigeration engineer who is the president of a refrigerator organization—whatever its exact name is, of the United States—is making the studies now on all offerings and will approve all those which reach the standards he sets, and has already approved some.

Q. Are the new refrigerators with proper insulation for storing this prod-

uct also to be put on the market as the showcases are?

A. They are, Mr. Ackerly, a single unit. The upper part is the display section and the lower part is the storage section. These retail freezer cases are combination cases.

Q. You mentioned in one of your answers that there had been a rapid extension of the meat market departments in chain stores during the past 40 years, but that recently there was, for a reason, I think you said, some slowing up in that. What is the reason?

A. I mean the reason is that they are waiting for the development of this quick new freezing process, to determine how much they shall move in that direction and how much to continue on their old line.

Q. Just a sound business policy, because of the imminence of this new process?

A. Yes.

Q. What I fail to see is how the packers are going to get any greater advantage out of the use of this branch house unless they can handle more goods through them?

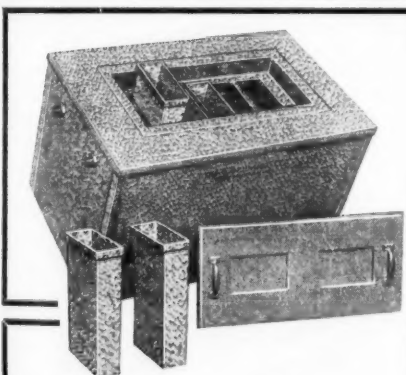
A. I think they will handle more of them, and I think they will shut up a lot of them. I think they have got to, even with entire freedom. I think they have got to shut up a lot of them.

Q. And with the quick-freezing process they will constantly decrease the branch house capacity, will they not?

Branch Houses as Depots

A. No. The quick-freezing process means that they will need branch houses for the purpose of depots for the storage of the quick-process goods, for distribution in that zone, quite as important in that respect—not more important, but equally important, certainly, as the distribution of the present product. That will not stop the diminution in number, because in proportion as the chain stores buy goods independently

(Concluded on Page 8, Column 1)



Quick, Easy Profits

Distributors have been quick to realize the urgent need for small, compact freezing units, which can be readily and profitably sold with a minimum of installation service.

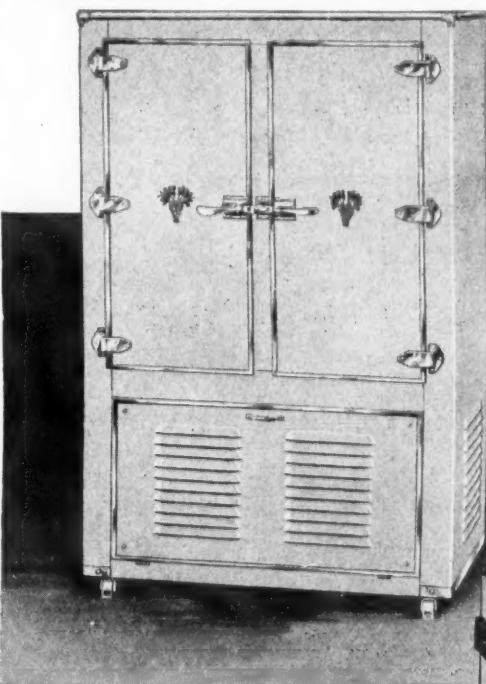
Thesco Can Ice Freezing Units adapted to all forms of mechanical and electrical refrigeration, have been developed especially to fulfill this need.

Distributors

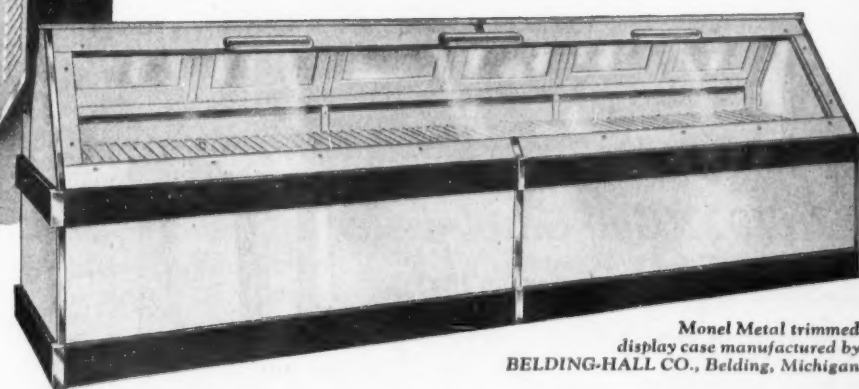
Write for complete proposition, discounts, and profusely illustrated catalogs, describing Thesco Refrigerators, Refrigerator Display Cases and Counters, and other refrigeration and store equipment.



The C. Schmidt Co.
John and Livingston Ave.
Cincinnati, Ohio



Monel Metal trimmed refrigerator manufactured by Belding-Hall Company



Monel Metal trimmed display case manufactured by BELDING-HALL CO., Belding, Michigan

Monel Metal is the "hall-mark" of modern refrigeration

MODERN as tomorrow...with the beauty of sterling and the strength of steel...Monel Metal is the symbol of economy, convenience and enduring quality. Buyers recognize this silvery Nickel alloy as the mark of modern refrigeration.

For in both household and commercial refrigerating equipment Monel Metal possesses a combination of properties which makes it ideal for trim, trays, lining and other vital parts of the cabinet.

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Monel Metal's many remarkable properties are due chiefly to its high Nickel content. Nickel is the whitening, strengthening partner that gives greater strength and beauty to many other metals. That is why "Nickel Alloys look better longer." Monel Metal contains two-thirds Nickel and therefore possesses these properties to a marked degree. Ask us for more information about Monel Metal and other Nickel alloys.

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THE INTERNATIONAL NICKEL COMPANY, INC., 67 WALL STREET, NEW YORK, N. Y.

FRUITS-VEGETABLES

Discussed at New York Meeting

(Continued from Page 1, Column 2)
ago the ratios were 25 per cent sold as fresh fruit, 5 per cent frozen, and 70 per cent canned.

H. W. Ullsperger—Cherries

Basing his estimate on this rapid growth in the volume of frozen cherries, Mr. Ullsperger predicted that within the next five years 75 per cent of the product will be frozen and the remaining 25 per cent divided between fresh and canned.

In his work in distributing cherries, Mr. Ullsperger has had an excellent opportunity to discover the practical difficulties which confront frozen foods, and he did not hesitate to mention them in his talk. First came inadequate cold storage facilities in many parts of the country. Second was the lack of proper channels of distribution, including, of course, the lack of proper display cases. Third was the fact that the modern home does not possess suitable refrigeration for keeping frozen products for any considerable length of time.

Mr. Ullsperger pointed out that, principally because of the objections enumerated, the bulk of the frozen cherries produced were now being sold to pie bakers, hotels, restaurants and caterers. He concluded as follows:

"In closing let me say that I feel that there is a wonderful opportunity in the frozen fruit industry, one that we should use every method available to develop, for it will give better prices to the producer and more satisfied customers than we have ever had in the past."

W. R. Tucker—Frozen Assets

Next on the list was that irrepressible gentleman from the South, W. R. Tucker, who began his speech by reject-

ing the title assigned to him, and announced that he would speak on "Frozen Assets." The suitability of his new title became apparent when he described how the freezing of peaches, which was begun commercially in Georgia last summer, had proved a boon to the growers, who in the past have been forced to let a goodly proportion of their crop rot, and who now see liabilities turned into assets by the introduction of quick freezing. He declared that the Tom Huston operation at Montezuma, Ga., had been conducted at a profit, and in describing the work further said:

"Before the peach crop of 1930, the main varieties began to move, there had been built at Montezuma, Georgia, a quick freezing plant designed to handle 40,000 pounds of ripe peaches in 24 hours. The plant was built and owned by Tom Huston Frozen Foods, Inc., of Columbus, Georgia; designed and constructed by Parklap Engineering Co., of New York and Tampa; and the refrigerating equipment designed and furnished by the Atlanta office of the Frick Company. The layout, design, installation and equipment was the result of the experiments of the previous year, and the plant was designed and intended to carry out on a commercial scale what in Georgia and the country generally had come to be known as the 'Tucker Process' of quick freezing tree-ripened Georgia peaches.

"This first commercial quick freezing plant for Georgia peaches operated throughout the season, handling over 1,000,000 pounds of raw material and turning out nearly 700,000 pounds of the finished product. Naturally, there were many delays, readjustments, changes, alterations, congestions and other troubles incident to getting a new plant going in an entirely new industry without guidepost or precedent. However, the fact remains that this first plant operated successfully throughout the entire season so long as raw material was available, and turned out a product

which has gone into consumption through the regular channels of trade. I think I violate no confidence when I say that the plant earned a profit despite all the difficulties that attend such new and untried ventures."

Clarence Birdseye—Facts and Figures

Clarence Birdseye began his talk with a general discussion of what quick freezing really is, and then got right down to details regarding the work which he and the various General Foods organizations have been doing in the freezing of fruits and vegetables. He said in part:

"Not all varieties of the same kind of fruit or vegetable are equally good for quick freezing. For instance, of eight varieties of peas grown in a certain locality, only two were found suitable for freezing. In many instances the varieties best suited for canning are worthless for freezing. It is therefore necessary that a careful study of this phase of the situation be made before quick freezing operations are undertaken on a commercial scale.

"Obviously, the freezing plant should be located at or very near the production point. Delicate berries and fruits begin to spoil shortly after they are picked; and vegetables such as peas and corn lose some of their natural sweet flavor within a few hours. Moreover, if all the possible economies of packaging and quick freezing are to be realized it is necessary that the operations be performed and the waste products eliminated before shipment has taken place. The season for each product is likely to be short, and the plant should be so located as to provide a succession of freezable products for as much of the year as possible.

"For the retail trade the individual packages should be reasonably small, both for the convenience of the purchaser and to facilitate quick freezing. When the pack is intended for institutional use, large, flat containers should

be used. The product should be packed into the cartons before rather than after being frozen, to insure a compactly filled package containing the minimum of air. The individual packages must be substantially moisture-vapor-proof and air-tight. For many juicy products they must also be liquid-tight. If they can be made transparent, at least over a portion of their area, so that their contents will be plainly visible, their salability will be increased.

"It is obviously desirable that quick-frozen products be so packed as to present maximum resistance to thawing during shipment. In this connection it should be remembered that heat leaking into a package—whether it be an individual shipping container or a refrigerated car—is in proportion to the surface area of the package, while the ability of the contents of the package to absorb that heat without thawing is in proportion to the quantity of the product. In other words, a solidly filled package can absorb more heat with less thawing than a similar package only partially filled. Therefore, we feel that the ideal individual package should be rectangular, since such packages make possible the most efficient use of space in refrigerated warehouses, cars, and trucks. Waxed lard-type paperboard cartons, lined or wrapped with moisture-vapor-proof material and heat-sealed, answer the purpose admirably for products which do not contain very much free juice. Juicy fruits and those packed with syrup must be placed in water-tight containers. Under certain conditions, it is desirable to pack vegetables and fruits in either an inert atmosphere or under a substantial vacuum.

"The only entirely safe way to distribute packaged perishable foods is to make sure that they remain hard frozen until they reach the consumer. Such foods contain within themselves a large amount of refrigeration, and if placed in well insulated shipping containers may be transported for long distances even by ordinary express or parcel post. For this purpose corrugated fiberboard containers, with the proper number of pads and liners, are admirable. Corrugated fiberboard has about the same insulating value as good sheet cork; and is light, strong, and inexpensive. Such a container, having an aggregate wall about an inch thick, and holding fifty one-pint cartons, costs less than twenty-five cents, including two-color printing and all labor in connection with setting up and closing. It will stand shipment by express; and if solidly full will, even in the hottest weather, keep its contents frozen for at least three days—and perfectly fresh, although partially thawed, for twice that long.

"Shipments of our quick-frozen flesh products are made in carload lots by refrigerated freight, and for that purpose ordinary meat cars are fairly satisfactory. Most vegetables and fruit, however, being less compact than meats and fish, do not contain as much refrigeration per cubic foot, and we have found that for the transportation of such products for long distances mechanically refrigerated cars are very serviceable. The enzymic action in plant products proceeds at higher temperatures than is the case with animal flesh, and it is not sufficient to keep vegetables and fruit merely frozen during transportation—they must be held in the neighborhood of 10° F. for trans-continental shipment.

"To the casual observer it will seem inevitable that packaging and quick freezing must increase the net cost to the efficiency of the equipment for the consumer. Such, however, is emphatically not the case, for savings in growing costs, packing, distribution, shipment, spoilage, dispensing, and preparation in the home more than compensate for the cost of packaging and freezing. Consider, for instance, the case of a meal of spinach consumed at Boston in January. Under present conditions the product, containing approximately 33½ per cent of inedible stems, discolored leaves and foreign matter, must be loosely packed in baskets or crates and so placed in the car that air will circulate freely all around the packages. Thus only a comparatively small amount of edible product can be put into the car. After arrival in the retail store the spinach spoils very rapidly, and I am informed that this spoilage amounts to from 15 to 35 per cent in different classes of stores. Finally, after the spinach has reached the consumer's kitchen, it must be carefully picked over, the waste eliminated, and all the sand and foreign matter removed. In contrast, with the above procedure, the frozen packaged spinach is mechanically washed, all waste eliminated, and pressed compactly into rectangular cartons, which completely fill the freight car. Such a product if properly handled under mechanical refrigeration in the retail store is not subject to spoilage; and when delivered to the consumer need only be dumped into a saucepan of water and boiled for a few minutes before being served.

"One of the first essentials in the merchandising of frozen packaged food products is that they should be displayed and stored under mechanical refrigeration in the retail store. This subject will be thoroughly treated by Mr. Hill, and I need not consider it further. The General Foods Corporation, however, has carried on for a number

of months past a large-scale sales campaign in Springfield, Massachusetts, the purpose of which has been to test the public's acceptance of a family of quick-frozen products and to work out the mechanical and merchandising problems involved in the retail distribution of such a line. This experiment has been outstandingly successful. It has proved that people will buy quick-frozen products if they are of an exceptionally high quality and suitably packaged. Eighty-five per cent of the present sales are repeats, and we are constantly receiving requests from additional stores to be allowed to carry our products. If there has been a prejudice in the mind of the Springfield people against frozen products, that prejudice has been rapidly dissipated. Spinach furnishes an interesting illustration of the public's acceptance of this new form of food distribution. We had large hopes of the success of many of our products, but we placed spinach on sale more to determine the point at which the public would balk than with any hope that it would be successful. Contrary to our expectations, however, the spinach, though packaged none too skillfully and sold at more than twice the price of the fresh product, sold better than any other item on the list.

"In other words, our Springfield experiment has proved that the American housewife will try anything once, and, having found it satisfactory, will repeat and repeat and repeat."

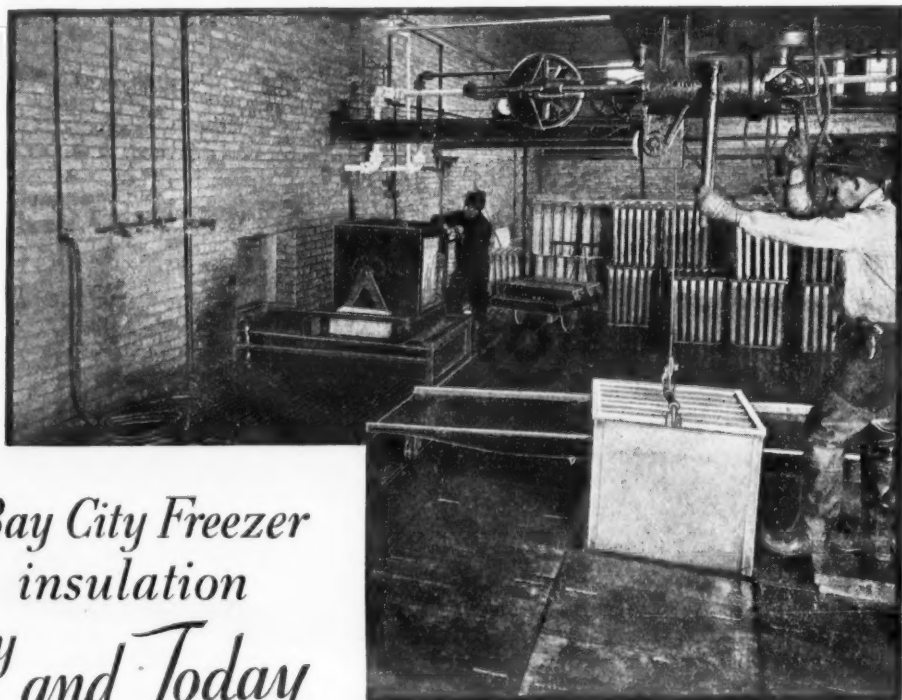
After concluding his own speech, Mr. Birdseye announced that Marion Harper, vice-president of the General Foods Sales Corporation, who was to have talked in the afternoon, was unable to be present as he had been called away unexpectedly the previous day. Mr. Birdseye then gave in more detail some of the experiences during the General Foods sales campaign in Springfield.

H. W. Wigney—Transportation

Horace W. Wigney, who is manager of Safety Refrigeration, Inc., of New York, began by tracing the refrigerated transport of perishables from 1857, when a passenger train carried a box-car loaded with fresh meat and crudely refrigerated with natural ice from Chicago to New York, to the modern type of refrigerated car. He quite naturally presented as his ideal of the modern car the Safety Iceless car operated by his own organization. He then read an amusing article from a sixty-two-year-old newspaper, which described the arrest of a man who tried to interest the investing public in a visionary invention called the telephone, using this article to refute these persons who today regard quick-

(Concluded on Opposite Page)

When "QUICK-FREEZE" was new..



Freezing cans being removed from cold room of the Bay City Freezer. 6" and 8" of Armstrong's Corkboard help to maintain temperatures 25 to 30 degrees below zero in this pioneer quick-freeze plant.

In 1922 Bay City Freezer used cork insulation exclusively and Today

CORK is still "standard insulation"

QUICK-FREEZING with low temperatures was radically new 8 years ago. There was no precedent to guide Paul Willer Petersen when he built his first plant, the Bay City Freezer, in 1922.

But even then Armstrong's Corkboard was the standard insulation for cold storage. Mr. Petersen believed that the insulation which had served this industry so well for 20 years and more would guard his new low temperatures of 25° to 30° below zero.

So he insulated his quick-freezing tank with two layers of four-inch Armstrong's Corkboard. The results justified his belief. To quote his own words, this cork "has served to date without the slightest symptoms of needing replacement."

Now quick-freezing has made widespread progress. New low temperatures have been inaugurated in almost every branch of the food industry. And wherever they are

found, there also is Armstrong's Corkboard. The exceptional insulating efficiency of cork makes it possible to maintain low temperatures without imposing an extra strain on refrigerating machinery. More important, it resists moisture, the deadly enemy of insulation. Throughout years of the hardest kind of service, Armstrong's Corkboard retains its efficiency.

Armstrong's Frozen Foods Development Committee is ready to help you secure the most efficient operation from equipment—no matter what the temperature you wish to maintain. Experienced insulation engineers are continually conducting experiments with many types of installations. Their knowledge and experience are available to the industry without charge. Just write to the Frozen Foods Development Committee, Armstrong Cork & Insulation Co., 917 Concord Street, Lancaster, Pa.

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FRUITS-VEGETABLES

Topic at New York Meeting

(Concluded from Opposite Page)

frozen foods as wholly visionary. In describing the actual work accomplished by Safety Iceless cars, he cited several shipments and showed charts recording the temperatures maintained. On this point he said:

"Among the hundreds of carloads of frozen products which have been successfully transported in Safety cars, there were, very recently, four carloads of mixed frozen fruits and vegetables, consisting of peas, beans, corn, asparagus, spinach, and berries. On these shipments the shipper requested that a temperature be maintained below ten degrees. The shipments moved from Portland, Oregon, to New York and Boston, and I am pleased to report that the average temperature maintained throughout the entire journey was about eight degrees. We also transported frozen peaches from Georgia to New York during the past summer, when the outside temperature was extremely high, but the average temperature of the load did not rise above 14 degrees."

Mr. Wigney's speech was followed by a short discussion of the morning speeches, after which the room was cleared for the frozen-food luncheon. Among the frozen-food producers who furnished meats, vegetables and fruits were Swift & Company, General Foods Corporation, Tom Huston, Inc., Henry Kelly & Sons, and the Fruit Growers' Union. For dessert there was a choice among Michigan frozen cherry pie, Birdseye frosted raspberries, and Georgia frozen peaches.

C. V. Hill—Low Temperature Cases

C. V. Hill, president of C. V. Hill & Co., Trenton, N. J., opened the afternoon session with a paper on display and storage cases. Mr. Hill, albeit he spoke in a manner which captivated his audience, left no stone unturned in his effort to prove that the new Hill dry wall case completely fills the needs of the situation created by the development of quick-frozen products. Interspersed among his encomiums of his new case were a number of more general observations, such as those which follow:

"Equipment for merchandising frosted foods is a vital factor in the frosted food business. Success depends largely tributor to the consumer. Even there storing and displaying the goods. Low temperature is the foundation of the frosted food business, from start to finish. In order to maintain the quality and flavor of the goods, they must be kept as near a uniform temperature as possible, and near zero. As a matter of fact, the temperature should never rise higher than 10 degrees above zero. The nearer you can hold the temperature to zero, the better it will be."

"Maintaining a zero temperature in a large storage room with the insulation eight or more inches in thickness, is an easy thing to do and has been done for many years. However, to build display cases with glass fronts to maintain a zero temperature and give satisfaction has been somewhat of a hard problem to solve. Space is always valuable—not only in the store or market—but inside of the case as well. Consequently, the walls and inside fittings must be built to conserve as much space as possible."

"Getting a low temperature was an easy matter, as with a machine large enough and running most of the time, you could get a zero temperature in a thin wall case of mostly wood construction. However, this type of case could hardly be called a 'zero display case.' It would be better adapted for displaying neckties and collar buttons. With a zero temperature in a thin wall case, on a warm day you could not see the display for frost, ice and moisture on and between the glasses. Also, the outside of the case would soon condense and absorb enough moisture to swell, crack, and twist the construction in such a manner as to render the case unfit for service."

"On account of frosted foods being a new development, there has been no demand for low temperature cases; consequently the field was entirely new to case manufacturers. Those who tried to explore the new field got lost in the jungle and some have not yet found their way out. However, wonderful improvements have been made within the last few months."

"What the public needs in a frosted food case is simplicity of construction. A zero case, including the machine, must be durable and dependable and not have a lot of contrivances to get out of order. The wet or dry wall system, when properly constructed and installed, is a most wonderful invention for preserving and handling frosted foods; as a matter of fact, the only known system at present that gives complete satisfaction. A case should be constructed without any or as few pipe connections inside, as possible. Every connection we can eliminate is cutting down a chance of a leak. "Any person going in the frosted food business should purchase the best equip-

ment obtainable—looking beyond the price. The price is not what you pay for. Frosted foods need dependable equipment and dependable equipment you must have to make a profit. You can get blood out of a stone as easily as a profit out of frosted foods in warm weather if your equipment is not dependable and falls down every few days. If there ever was a business that needs high grade equipment, it is the frosted food business as a low temperature at all times is the foundation of the business—the master key to success."

E. S. Reynolds—Sealed Containers

Edward S. Reynolds, of the American Can Company, then talked on the use of hermetically sealed containers in the preservation of fruits by freezing. Mr. Reynolds devoted much of his time to a discussion of the one-gallon can successfully used by cherry growers in three states during the 1930 season, and the possibilities of the one-pound can, both closed under vacuum. He summarized his discussion in the following words:

"First: A process for freezing fruits under vacuum, in an hermetically closed container, has been perfected, which has the following demonstrable advantages: (a) a liquid-tight package, serving as insurance against loss of contents between packer and consumer—a clean, unstained container; (b) insurance against possible absorption of foreign odors and flavors while in storage; (c) retention of the volatile elements responsible for fresh fruit aroma and flavor; (d) a gas-tight or hermetic container gives the consumer an easy means of knowing whether or not appreciable fermentation of the contents has occurred, simply by the external appearance—that is, whether the ends are swollen or not; (e) control of air discoloration; (f) inhibition of mold growth."

"Second: The distribution of the size intended for commercial consumption does not present any serious difficulties. The commercial consumer is already experienced in the handling of frozen fruits."

"Third: The success of the size designed for the individual consumer depends on scientific distribution and the education of the housewife. It will not be possible to undertake the packing and distribution of frozen fruits in a container designed for individual consumption until a scientific method of distribution has been perfected, which necessarily will have to be accompanied by intensive educational advertising."

C. A. Magoon—Bacteria

A thorough discussion of an important and not often mentioned phase of quick freezing was then contributed by C. A. Magoon, senior bacteriologist of the United States Department of Agriculture. Up to the time he began to speak the whole atmosphere of the meeting had been one of optimism, but Mr. Magoon described the hardness and longevity of bacteria so well and so forcefully that by the time he sat down many of those who heard him were about ready to give up food altogether, whether quick frozen or not. In fairness to Mr. Magoon, it should be said that he declared himself a firm believer in quick freezing as a preservative, and only marshalled his millions of bacteria into action in order to point out the possible dangers and encourage a thorough study of quick freezing merits and demerits by those anxious to rush into the new field without proper preparation. In conclusion he said:

"From a review of our problem and the factors involved in it, it is apparent that the supervision of frozen pack foods must extend beyond the limits of production and storage. High quality in the raw material is required; careful preparation is essential; and the best methods of packaging, of freezing, and of storage must be utilized to assure the maintenance of that quality. All this care and labor, however, will readily come to naught unless that quality is passed on through the hands of the distributor to the consumer. Even there the responsibility cannot end; for unless the consumer is not only told, but at the same time made to realize that the food purchased is perishable and must be treated as such, blame upon the dealer and the manufacturer, whether merited or not, will be inevitable. An educational campaign will therefore need to be put into operation and made as comprehensive as possible, setting forth not only the qualities of the frozen foods, but also proper methods of handling and of utilization."


"Meanwhile, careful, painstaking fundamental research must be pursued, to the end that frozen foods shall in all respects equal if not excel the best obtainable in other forms."

After Mr. Jabine's speech, which concluded the scheduled program, and in which he expressed the thanks of the industry to the New York Food Marketing Research Council and Earl R. French, its secretary, for arranging the meeting, a number of those in the audience were called upon for a few remarks. Among them were Paul Willer Petersen, Gordon C. Corbaley, Francis X. Burke, and A. M. Fenwick, all well known in the new industry. Professor Alexander then declared the meeting adjourned.

Matched Unit Makes Its Appearance



Matched unit, low temperature case marketed by Puffer Hubbard of Minneapolis. (See story on Page 8.)



100% VERTICAL SURFACE

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The performance features of LARKIN (patented) 100% Vertical Surface Aluminum Plate COILS are so broad and strong . . . so essential to better, economical performance, that we submit this indisputable proof. These well-known manufacturers have adopted LARKIN COILS as standard factory equipment only after long, exhaustive, numerous tests.

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LARKIN COILS have secured national acceptance because they positively eliminate de-hydration and de-frosting problems and are so self efficient that servicing becomes a negligible factor. These features make LARKIN COILS a necessary aid to lower cost, better, trouble-free electrical refrigeration. Detailed information from any manufacturer listed here or direct from the originators and manufacturers.



93 different sizes of LARKIN COILS in stock—every commercial requirement covered—quick service a feature from this, the largest coil line on the market.

NOTICE

LARKIN COILS are covered by U. S. Patent No. 1,776,235, and it is the intention of the manufacturer to protect its patent rights.

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WILLIAMS ICE-O-MATIC
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Lifetime Refrigeration

Electric-Automatic REFRIGERATOR
PHILADELPHIA

SNYDER

On Economies of Quick Freezing

(Concluded from Page 5, Column 5)

and run them into their distributing warehouses and distribute them to their own retail shops with their own trucks, in just that proportion will the diminution of demand upon the branch houses go forward.

Q. Did you not say that the quick-freezing process resulted in a less volume of goods to the large packing plants?

A. But not a less volume of meat, a less volume of tonnage to move out.

Q. But the important point in the branch house is space, is it not?

A. It would save them probably 20 per cent. Oh, I think the millenium has not arrived; not all the business is going to be put upon this basis, by any means.

Q. I am trying to find out how the transfer to the quick-frozen type of meats is going to help in this branch house difficulty?

A. In this way, that the packers will themselves in their own interests find a way to utilize this new factor in the preparation and distribution of foods with the retail interests of the country, which, in my opinion, will be still further widened.

Q. Will be what?

A. Will be widened. I mean that the grocery store, not having sold meats at all up to this time—many of them will go into that business and that will put more of a strain upon the markets already established. I will grant you, which they must meet, but also it will offer meats in very many places where they are not now offered and will probably make a real contribution to the added consumption of meats, because of the freedom of offering in so many new places. It is a law of business that when you offer a given item of merchandise in many new places, you will find a new demand for it, because of its convenience to the public.

Q. You mean, then, that we are going to have to eat more meat?

A. I think more meats will be sold than before, because of the advantage and convenience of this new offering.

Q. I understand, you make it clear I think, that with a certain amount of consumable meat going to the consumer, under the quick-frozen process, that will move in less bulk than it does now?

A. Perhaps 20 per cent less, I should think.

Q. Assuming that the bulk amount of meat remains the same, that would mark approximately a 20 per cent reduction in the necessary branch house capacity, would it not?

A. Yes.

Q. Then I still fail to see how this quick-freezing process is going to help the utilization of that branch house space unless they are going to depend on groceries and unrelated lines in order to do it?

A. I should think that they would be very anxious to put additional volume in that branch house, of some kind.

Q. And if more groceries are handled in these branch houses, that will withdraw them from the existing channels of distribution.

A. To a degree.

Q. Then the branch house facilities which are now employed in handling them will be superfluous; is not that the necessary result?

A. Either that, or available for something else, as you please.

Q. Available to sell to somebody for salvage for other uses?

A. Yes.

Q. Of course, the surplus packer branch house space or capacity is immediately available to other uses?

A. It will either eventually be used

profitably or abolished. It must be used profitably or eventually abolished.

Q. Then this measure represents a measure to transfer the packers' bad luck to the line of interests who are engaged in handling non-meat lines now?

A. I would not so characterize it. It would be freedom to do business in an American fashion.

MATCHED UNIT

Minneapolis, Minn.—Introduction of a matched unit low temperature case (refrigerating unit, coil and case) has recently been made by the Puffer-Hubbard Manufacturing Company of Minneapolis. The matched unit is brought about through the combination of a Puffer-Hubbard low temperature case, with a Kelvinator X5-60 coil, and a Kelvinator F-31 compressor using sulphur dioxide as a refrigerant.

The matched unit is portable and can be shifted to various locations in the store, due to the fact that the compressor and all equipment are housed in the case. The compressor compartment is located at one end of the case. Dry-Zero insulation is used and the exterior of the case is finished in Duco. Temperature control is brought about through the use of an American Radiator control.

Through the use of an electric switch defrosting is easily accomplished. Defrosting is started by pressing the button in the switch and continues until it is completed, at which time the refrigerating machine automatically returns to normal operation.

BRITISH ENGINEERS HEAR ZAROTSCHENZEFF

London, England—Dr. M. T. Zarotschzenzeff, well known inventor and experimenter in quick-freezing operations, presented a paper on December 4 before the British Association of Refrigeration. His paper was entitled, "Latest Achievements in Rapid Freezing and Chilling Methods," and was read by his son, W. Zarotschzenzeff.

Still Going Strong



Thirsty tourists have found Copeland cooled beer and stout much to their liking at this oasis in Johannesburg, South Africa.

COPELAND

Cools Drinks at Famous Bar

TO tourists who have visited Johannesburg, S. A., the Shakespeare Bar, opposite the Carlton Hotel, is a well-remembered landmark. For not only is the establishment famous for its collection of animal heads, but also it is equally renowned for its cooled beer and stout.

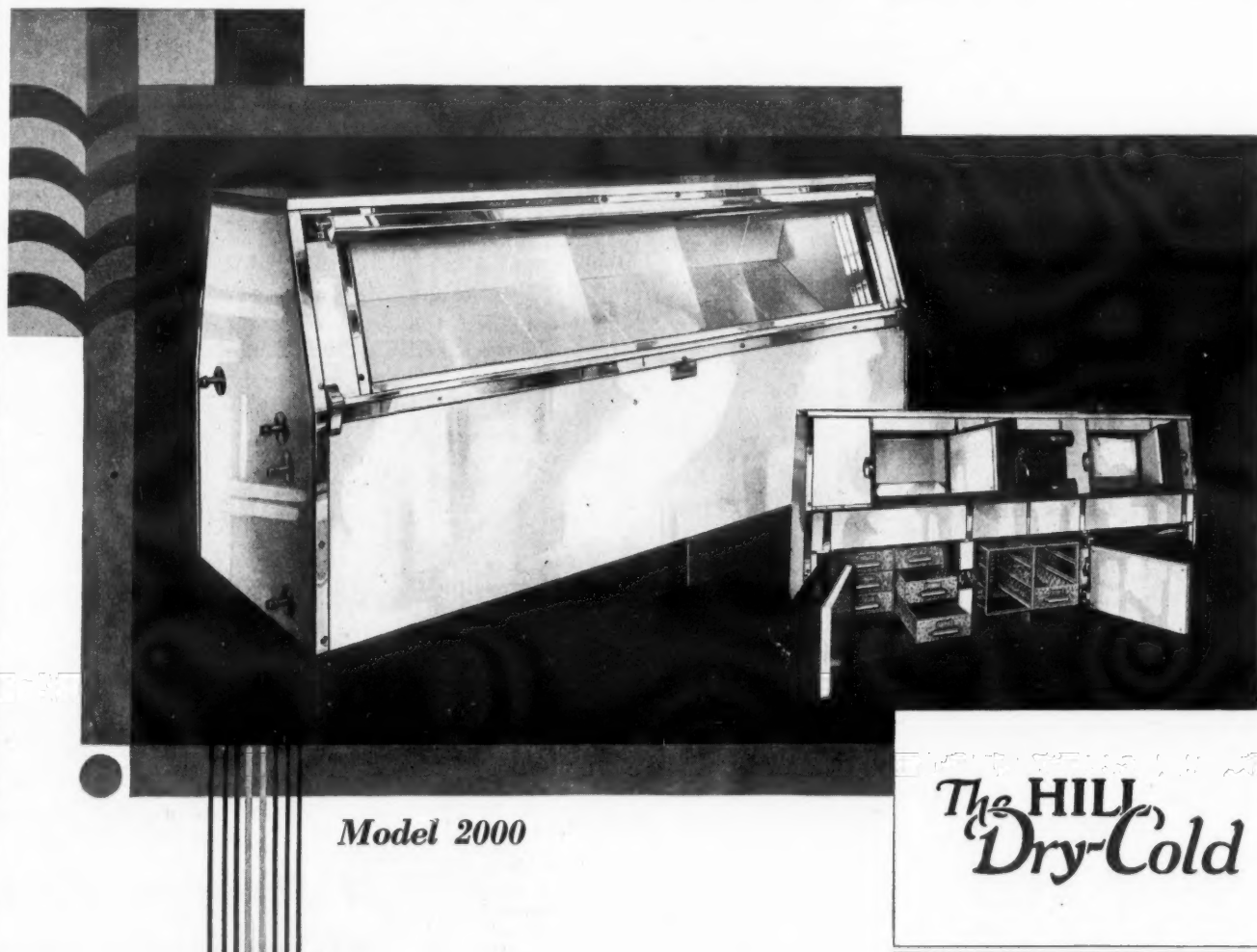
The semi-circular bar is equipped with three refrigerator cabinets which are located underneath the counter. The counter boxes are 10 feet, 9 feet and 7 feet long. Equipment consists of one pair of 10 T coils, 8 T coils and 6 T coils, respectively. These compartments are cooled by Copeland-Larkin coils and are run off a Copeland model XA compressor.

A multiple expansion valve is used in each compartment, which allows for the box temperature to be controlled individually. This is necessary, as beer and stout are not brought down to such low temperatures as mineral waters. Two of the cabinets are constructed to hold barrels of beer, together with other beverages.

In addition, there is an island fixture. Inside is a box with a capacity of approximately 40 cubic feet. This is used for cooling barrels of beer. As many as 16 large barrels can be placed inside at one time. This particular compartment is operated independent of the counter equipment and is run from a heavy-duty Copeland compressor.

The Shakespeare Bar installation was made by the A. E. G. Engineering Company, Copeland dealers in Johannesburg.

The Copeland Snowman perched quite conspicuously on the bar lets patrons know that he is on duty at this famous oasis.



Model 2000

The HILL Dry-Cold

FROZEN FOODS

The Patented Dry Wall System has no equal in preserving and handling frozen food. It is now possible to serve this type of food as safely and easily as others. The new Hill case with this system meets the demand with absolute success. Defrosting is completely solved, as well as a constant Zero temperature. Ideal insulation and lighting arrangement—no fogging or sweating between the glass—composition doors that will not swell—no worry of leaks from coils.

Why spend money and time to experiment when you can buy equipment that is known to be good?

Write For Illustrated Booklet

C.V. HILL & CO., Inc.
TRENTON, NEW JERSEY

That Christmas Gift Question for your friend in the industry

Here's the Answer! Enter his subscription to Electric Refrigeration News—a gift that lasts the whole year through!

SUBSCRIPTION ORDER

ELECTRIC REFRIGERATION NEWS
550 MACCABEES BUILDING, DETROIT, MICH.

Please enter subscription to *Electric Refrigeration News*.

United States and Possessions: ☐ \$2.00 per year. ☐ Three years for \$5.00

☐ Refrigerated Food Section only, \$1.00 per year.

All other countries: ☐ \$2.25 per year. ☐ Two years for \$4.00

I am enclosing payment in the form of ☐ Check ☐ P. O. Order ☐ Cash

Name.....

Address.....

City and State.....

ELECTRIC REFRIGERATION NEWS

Registered U. S. Patent Office.

The business newspaper of the refrigeration industry

ISSUED EVERY TWO WEEKS
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TWO DOLLARS PER YEAR

NEW REFRIGERATING MACHINE MODELS INTRODUCED

Frigidaire Plants
Stress Size,
Economy"World's Largest" Heard Often
Around Dayton Factories

By George F. Taubeneck

Dayton, Ohio—Bigness is the dominant note in the Frigidaire factories. The visitor who wants to see "the whole works" must actually tread miles of wooden lanes. And at every quarter-mile post or thereabouts, he is told that some particular installation or room or section is the largest in this or any other world.

There are two plants. In one the refrigerating units are made. The other, the Moraine plant, houses both the cabinet factory and the final assembly lines. Plant No. 1, the original Frigidaire factory, is much like any other large factory building. The Moraine plant, however, is as unique as it is long; and it is the largest one-story factory building under one roof yet discovered.

All told, the Frigidaire factory buildings contain more than 51 acres of floor space, of which 1,509,440 sq. ft. belong to the Moraine plant.

During the World War this plant, or rather, as much of the present spreading structure as was in existence at that time, was used for the building of Wright airplanes. Shortly after this function ceased, it was taken over by the Frigidaire Corp., which more than trebled its size and capacity.

As one approaches it from the road it looks almost endless. Low, squat, undulating, it reminds one of a brick smokestack which has converted its height into length by stretching itself over a great distance of terrain.

Flanking it like a bodyguard are a number of buildings which feed it with such essentials as power, acetylene, porcelain enamel, and raw materials.

Whole freight trains roll inside of this factory, unload and load again, and steam out. Trains of wagons drawn by electric trucks thread the "streets" in this elongated plant. There are 54 of these electric trucks, and they come tearing around corners with considerable speed.

At one spot in the factory, where two
(Concluded on Page 6, Column 5)

Trupar Business Good
In Kansas City

Dayton, Ohio—Trupar Manufacturing Company, makers of Mayflower electric refrigerators, reported recently a shipment of another full carload of Mayflowers to the Chandler Pump & Supply Company, Kansas City distributors, making 15 carloads sent to that firm within the past six months.

B. K. Williamson, St. Louis Trupar representative, reports that Trupar electric refrigeration has been installed in all diet kitchens, drug store and laboratories of the new Deaconess Hospital in St. Louis. Twelve 12-foot lacquer-porcelain boxes have been installed, Williamson reports. Each cabinet is equipped with a Trupar No. 200 compressor and one four-tray C cooling unit.

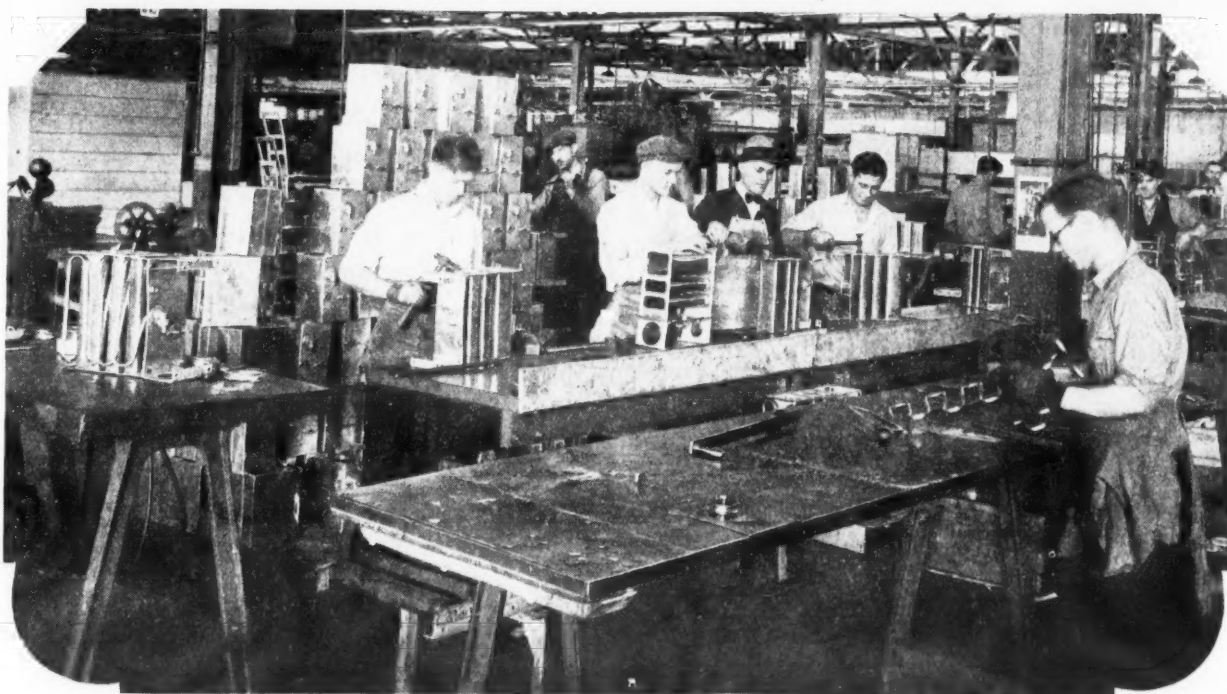
The U. S. Veterans Hospital, Ogden, Utah, has just received 14 Trupar water coolers. In New York City two new Schwarzler apartments have recently installed 200 Trupar self-contained units.

COLUMBUS APARTMENTS
G. E. EQUIPPED

Columbus, Ohio—Bard & Barger, Inc., distributor for General Electric refrigerators, recently installed 24 General Electric refrigerators at the Belmont Apartments, 630 East Town Street. For 12 hours before the refrigerators were installed, passers-by were confronted by the entire equipment lined up before the house.

Mrs. Chris L. Stenbling is the resident manager of the apartments. The installation deal was handled by C. F. Davis, sales manager of the apartment house division of Bard & Barger, Inc.

Assembling the Chilling Compartment



Skilled workmen assemble the cooling units in the Copeland plant at Mt. Clemens, Mich.

Units Improved
In Details,
DesignLeading Manufacturers Refuse To
Rest on Laurels in 1930

THE electric refrigeration industry is not resting on its oars. Basking in the limelight of nation-wide publicity and attention, realizing the profits which have resulted from good service and answering a human need, the industry might well assume that the time had arrived when it could afford to coast for awhile, and cash in on its reputation.

That attitude, however, prevails not in the group of young and forward-looking men who are making industrial history with the fast-moving organizations which manufacture and sell electric refrigerators. Proof of that statement can be found in the number of new and improved models which leading companies have introduced during the past year.

In the Buyer's Guide Section of the December 3 ELECTRIC REFRIGERATION NEWS new developments in refrigerator cabinets were considered. Refrigerating units are given the same treatment in this issue. Old heads in the industry may be surprised to notice the number of new models and changed details listed by the various advertisers in the charted specifications.

More and more the trend in new designs of refrigerating units seems to be toward the enclosed, easily removable type. General Electric pioneered with the hermetically sealed unit, which can be lifted out of the top. Other companies have offered variations of the idea.

Among the most interesting of the new hermetically sealed jobs is the Servel Hermetic, announced in November. This unit is not in the top of the machine, but in the bottom. It can easily be removed by one inexperienced man.

Air is drafted from the floor to cool this machine, which is entirely under low pressure. Direct drive, force-feed lubrication, and a small amount of refrigerant (15 ounces of methyl chloride) are among its features.

As recently as September, Kelvinator invaded the low-price field with its
(Concluded on Page 6, Column 5)

Servel Multiple System
Sold In Evansville

Evansville, Ind.—The Donaldson Arms Apartments, Second and Howard Sts., a building comprising sixty modern apartment suites, is the latest Evansville building to be equipped with electric refrigeration.

The contract placed with the Southern Indiana Gas & Electric Company, Servel and Electrolux distributor, calls for installation of a multiple system serving sixty Servel cabinets, according to Edward McGinness, supervisor of city sales.

Each Servel cabinet is designed to fit into a section of uniform kitchen cabinet installed in each apartment. The Servel cabinets will be refrigerated by four machines, each machine serving fifteen cabinets.

CREIGHTON UNIVERSITY
INSTALLS FRIGIDAIRE

Omaha, Neb.—Creighton University has just completed a quarter-million dollar building project. Frigidaire equipment has been placed in the new building. One large walk-in box with three compartments was installed with a 2 h. p. compressor.

Three separate temperatures are maintained. One compartment is for vegetables, a second for meats, and the third for beverages. This compressor is also connected with a service box in the dining room.

A complete water-cooling system was installed. This has seven outlets and maintains a capacity of forty gallons the hour. A 1 h. p. compressor was used on this installation.

Plumbers, Steamfitters Hurl Boomerang

By F. M. Cockrell

WHEN the bosses of the Plumbers and Steamfitters Unions in Chicago saw a chance to make a racket out of refrigeration, they were not slow in jumping into the code battle which occupied so much time of Chicago city officials during the summer and fall of 1929. As a side issue, the two unions waged war for control of the installation of multiple systems.

In doing so, it is not likely that they foresaw the possibility that the troubles of the refrigeration industry would eventually result in revolutionary changes in both plumbing and steamfitting practices.

While the engineers and lawyers argued, while aldermen charged and countercharged, while department heads of the city disputed, and while rival manufacturers pulled wires this way and that from behind the scene, the bystanders (innocent and otherwise) made their estimates as to what would result from all the fireworks which followed discovery that leakage of gas from refrigerating systems might be hazardous to human life.

All sorts of experts were summoned to testify, all manner of solutions were offered to the problem. Doctors, law-

yers and chemists, engineers, coroners and inventors sought to solve the riddle. Various schemes were proposed to detect leaks, to limit the leakage, to vent the leakage out of the building, to warn the occupants when a leak has occurred. There was so much talk about leaks in considering the code that one of the aldermen branded it "The Leaky Code."

Throughout the turmoil ELECTRIC REFRIGERATION NEWS refused to take sides, but endeavored to report the battles faithfully. Both sides of all arguments were reported in detail, on the theory that industry education would be advanced and that somewhere out of all the discussion would come some worthwhile truth. Trouble makes people think and a lot of people were set thinking about how to keep refrigerant gases from leaking.

One of the places where thinkers got busy was up in Port Huron, Michigan. There the Mueller Brass Company has been making things out of copper and brass for many years. Among their products were fittings for electric refrigeration systems.

In their factory were rows of automatic machines for tapping and threading brass parts—couplings and elbows, valves and manifolds, and dozens of

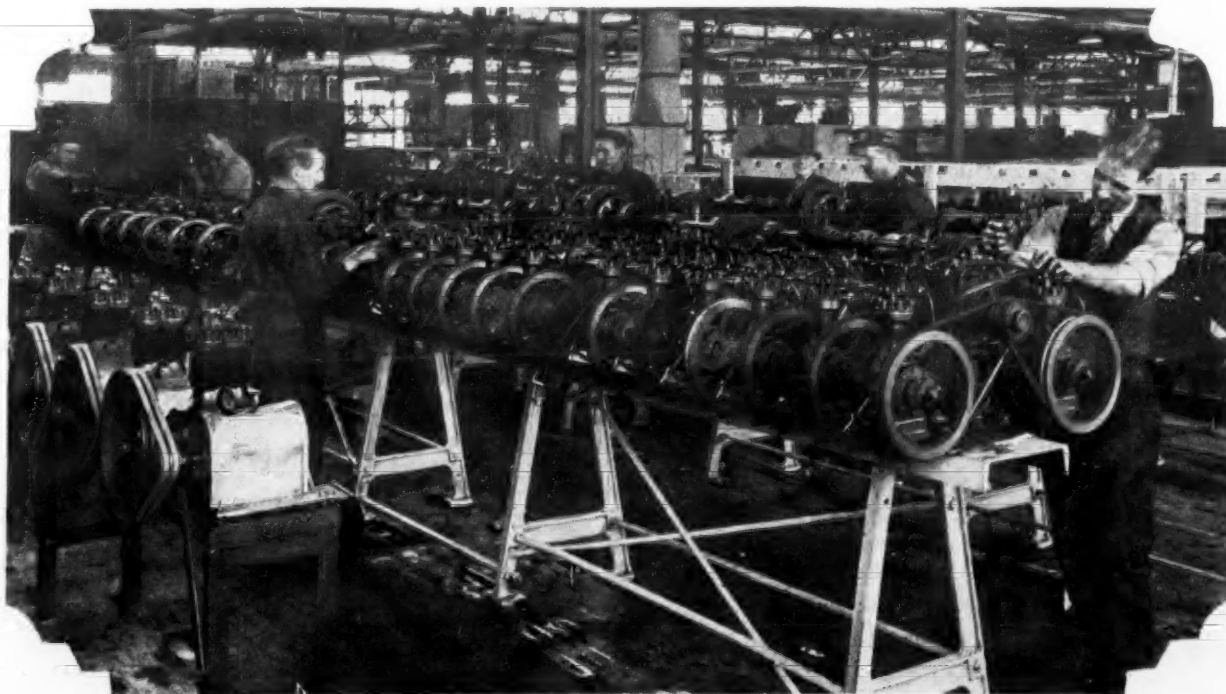
other parts used in putting a refrigeration system together. Whenever one wanted to hook two brass parts together, threads were cut. That was the way it had always been done. And the Mueller Brass Company knew how to cut threads. They knew copper and brass, and they knew how to make things out of these metals.

But all of the argument over in Chicago set the Mueller people thinking. Perhaps brass parts could be put together a different way. Why not solder the joints? Nothing new in that suggestion. That had been tried a thousand times before. A soldered joint lacked strength. It only sealed the edges of the fitting.

Then somebody thought about capillary attraction. Why not make a fitting with a smooth bore just large enough to slide over a piece of pipe and with just enough clearance to let old man Capillary do his stuff? Make a little hole for the solder to go in, let capillary attraction pull it the full length of the joint. They tried it and it worked. Patent papers were filed.

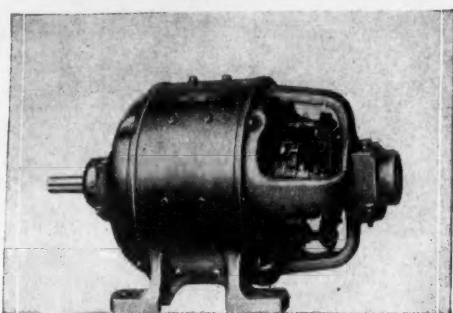
Up at the Mueller Brass plant they like to demonstrate their trick. A young man takes a piece of copper tubing and
(Concluded on Page 6, Column 3)

All Quiet on the Compressor Line



Before installation Copeland compressors must pass rigid tests for quietness and efficiency.

THEY KEEP A-RUNNING



S. H. P. Century DC Motor

DIRECT-CURRENT MOTORS

For more than 35 years Roth Constant, Variable and Adjustable speed Direct-Current motors have demonstrated their "Keep a-Running" ability in all types of installations under constant or widely fluctuating loads, in dry and humid atmospheres and in clean or dirty surroundings.

These motors are supplied with either shunt, compound, or series windings for all commercial voltages—phosphor bronze sleeve bearings or ball bearings—open, semi-enclosed, and fully enclosed ratings built in sizes from 1/4 to 100 horse power.

CENTURY ELECTRIC COMPANY
1806 PINE STREET - ST. LOUIS, MO.

40 U. S. and Canadian Stock Points and More Than 75 Outside Thereof



FOR MORE THAN 26 YEARS AT ST. LOUIS

Off Duty In Dayton, Ohio

By GEORGE F. TAUBENECK

"Go to Dayton, young man!" Ever since dynamic, unconventional John H. Patterson invented specialty selling in that Ohio city, it has been considered a place of opportunity for the young man about to set out on his quest for fame and fortune.

Today it is still something of a Promised Land for ambitious youths. John H. Patterson is there in person no longer, but "N. C. R. (National Cash Register Co.) is still running in high gear, and still making its decisions out of old John H.'s book.

So are any number of specialty selling organizations built up by Patterson-trained men. Dayton now presents not one, but several, companies where upward looking young men may learn all about psychological moments, and what to do when they arrive.

There is another reason for advising the aspiring tyro to see Dayton before choosing. It is an exceptionally liveable city, a spot made to order for the man who likes order, cleanliness, beauty, and good taste in his surroundings.

The streets are wide, unusually so. The buildings match and balance, and are modern, substantial, and well designed. The shops and stores which carry quality merchandise—really "good goods," the kinds of clothes and furniture and books and personal requisites which connoisseurs and persons of discriminating taste would choose—are here in numbers. Some of the residential districts

are like dreams come true. Built on gentle undulations, they contain winding streets, well-kept stretches of terrain, and mansions of surpassing grace and style.

An unfortunate disaster, a rampaging flood, was turned to good account by Dayton citizens.

When the flood came the townsmen were forced to pool their resources and talents to emerge and save themselves from municipal mutilation.

The lessons of harmony and teamwork learned then have not been forgotten.

Electric refrigerator dealers are in sight at almost any spot in the business district of Dayton. High class shops they are, with attractive exteriors, neat displays, and all the trappings, trimmings, and settings in the catalog.

At one prominent corner the Frigidaire commercial display looks across the street at the General Electric dealer. And both flash an inordinate amount of eye-appeal.

The Westinghouse dealer is comfortably ensconced in a set of maple furniture and a background of modernistic woodwork. Down the street a dealer in Starr pianos and Starr Freeze refrigerators has a novel window display.

For many years this Starr dealer, who is as loquacious as he is good-humored, has been selling Starr pianos, phonographs, and Gennett (Starr-made) records. When Starr began making radio cabinets for Atwater-Kent and others, he took on the radio, too.

Last year, to give him something seasonal to sell during the summer months, he put in a line of Zerozone electric refrigerators. They sold so well and gave him so little trouble that he became quite enthusiastic about the proposition; and when the Starr Freeze came along, there was at least one particularly happy man in Dayton.

"After years of effort expended in the business of selling pianos," he says, "the advent of electric refrigerators is like the unveiling of the Land of Canaan. For pianos we had to make our own prospects; whereas every wired home which is not already equipped with electric refrigeration has a potential customer.

"When selling refrigerators we are selling health—something that affects every member of the family vitally. Musical instruments are ordinarily used by only one member of a household. Moreover, the initial cost is high, and they are far from being necessities."

The fact that pianos are hard to sell doesn't stop this enterprising dealer from keeping his stock turning over, however. He sponsors group classes of piano pupils, hiring a teacher to direct the efforts of those who enroll.

Two pupils are placed at each piano during these lessons, and two more at the ends of each piano. Those at the ends watch those at the keyboard, and catch their mistakes.

Thus a new collection of piano prospects is created periodically. He finds, however, that it is almost as difficult to round up the pupils as it is to scare up potential buyers.

The solitary feature of Dayton's business district that does not conform with the general picture of heads-up progressive enterprise is the newsboy clan.

In most cities the newsboys are the

bravest, fightingest buckaroos in the city. Self respect? Yes, sir! Plenty!

Dayton newsboys, however, are little beggars. They whine and wheedle for their pennies, tag along like kid brothers until the prospect either buys to get rid of them or turns on them and glowers. Some of them even hunt in packs.

As one motors from the Moraine plant of the Frigidaire Corp. to its plant No. 1, one passes a rolling stretch of turf which has a low stretch of hills in the background.

In livid white against this ridged background appears a monument. On that monument, in black relief, is an equestrian statue of John H. Patterson. Over the rolling ground which his representation now surveys, old John H. was wont to gallop on horseback every morning. It was one of his many fads.

A little farther down the road the motorist enters one of the most beautiful residential quarters in the country. Among those who live in this architect's Valhalla are Orville Wright, the pioneer airplane builder, and E. G. Biechler, president of Frigidaire. They are neighbors.

A striking fact about these homes is that they were built and are owned by men who have amassed their own fortunes. Similar groups of Croesian dwellings in other cities are likely to belong to second, third, and fourth generation estates.

The answer is that the single-generation fortunes which these Dayton homes represent are to a considerable extent the result of John H. Patterson's training.

Those fortunate young men who once rode the hills with "the god of Dayton" during the first hours of the morn, have now settled comfortably in those same hills, and are daily putting into practice Patterson principles and ideas. His soul goes marching on.

McKee Joins Majestic

Canton, Ohio—G. S. McKee, for 12 years assistant factory manager of the Timken Roller Bearing Co. of Canton, has resigned his position to become factory superintendent for the Majestic Household Utilities Corp., Chicago. He assumed his new duties December 1.

As factory superintendent, Mr. McKee will have direct supervision of production in the refrigerator division of the Majestic Company.

Mr. McKee is a graduate of Ohio University, a World War veteran, and while in Canton with the Timken Company, was actively identified with civic and political organizations.

LIPMAN IN NEBRASKA

Omaha, Neb.—P. O. Domke, agent for Lipman in Omaha, reports placing a 2-ton machine and one of only 1/4-ton capacity in The Boyden Pharmacy in Norfolk, Neb. Mr. Boyden has ordered a duplicate of the installation for his drug store in Lincoln. The contracts amounted to \$10,000.

A second installation just completed by Mr. Domke is that of a water-cooling system for the Badgerow Building, Sioux City, Iowa. This building is 90 x 135 feet and ten stories. There is an outlet on each floor of this building and 75 gallons of cooled water is furnished every hour. The contract calls for an expenditure of \$1,200.

Another Lipman contract just completed in Sioux City is that of the Sarang & Clemenson Drug Co.

MUELLER STREAMLINE VALVES AND FITTINGS

for Electric Refrigeration

SEALED CONNECTIONS Without Nuts or Flares!

The new Mueller STREAMLINE Refrigerator Fitting is a permanently tight connection for Electric Refrigeration work—a fitting actually STRONGER THAN THE TUBING WHICH IT CONNECTS—yet much lighter, simpler, more quickly completed and more economical than any previous type of refrigerator fitting.

The end of the tube is slipped into the fitting, the proper distance being made positive by a shoulder inside the fitting against which the tube rests. Solder wire is fed in through a conveniently located opening in the fitting by applying heat from the blow torch.

The solder is thoroughly distributed around the joint by CAPILLARY ATTRACTION and is promptly visible around the entire end of the fitting, conclusively indicating that the joint is complete. It is refrigerant, seepage and vibration-proof. The STREAMLINE Fitting represents a remarkable saving of time and labor, as well as giving absolute assurance that every connection is both perfect and permanent. No flaring is necessary, and there is no waste "endage." The fitting itself is lighter, meaning a considerable saving in weight. Inside diameter of the fitting is the same as that of the tubing—there are no uneven surfaces or obstructions. MATERIAL AND INSTALLATION COSTS ARE CUT APPROXIMATELY IN HALF.

Mueller STREAMLINE Refrigerator Fittings, with the exception of the couplings, are FORGED. The coupling is made of extruded seamless copper tube. Forgings being made in dies under tremendous pressure, have a dense, close-grained structure that makes seepage through the fitting itself, impossible.

Mueller STREAMLINE Electric Refrigeration Valves and Fittings can be made to suit your special requirements.

MUELLER BRASS CO.

PORT HURON, MICH.

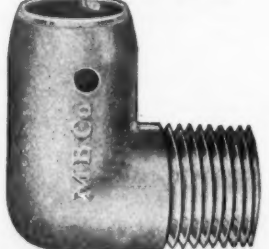
THREE GENERATIONS OF BRASS MAKING



STREAMLINE Tee, copper to copper
Patent 1,770,852
Patent 1,776,502
Other Patents Pending



STREAMLINE Coupling, copper to copper
Patent 1,770,852
Patent 1,776,502
Other Patents Pending



STREAMLINE Elbow, copper to outside pipe thread
Patent 1,770,852
Patent 1,776,502
Other Patents Pending

SIMPLICITY

Electro-Kold simplicity, there being fewer parts to manufacture, has always enabled this company to sell Electro-Kold at a LOW PRICE.

ELECTRO-KOLD
REFRIGERATION
Since 1922

South 151 Post Street, Spokane, Washington

To DEALERS

who want to do a bigger business

in 1931

Frigidaire Corporation is going to offer a number of new dealer franchises in 1931 and is now seeking the men to whom they will be given.

For fifteen years Frigidaire Corporation—always in the forefront of its field—has been responsible for developments in electric refrigeration that have created a world-wide acceptance for Frigidaire. As a result the men who comprise our dealer organization are in an enviable position.

And Frigidaire Corporation is back of every dealer *helping* him to sell. Headquarters are continually in touch with dealers, offering helps that stimulate sales and that remove stumbling blocks to success.

Available to every dealer is the advice and counsel of experts skilled in window displays—arrangement of store interiors—handling of direct mail—in developing ideas for securing greater show-

room attendance—in working out contests and prize offers to stimulate sales and salesmen's activities—in planning special sales campaigns.

As a result, Frigidaire dealers and dealers' salesmen are in a position to devote their time to selling and to building up a successful, growing sales organization.

For years, Frigidaire has been one of America's largest advertisers. Millions have been spent in newspapers, in magazines and on bill boards. Advertising plans for 1931 contemplate a tremendous increase over 1930. More than ever before, Frigidaire advertising will do a powerful selling job for Frigidaire dealers.

These are just the highlights of what Frigidaire offers to the men chosen for the new dealerships in 1931. Frigidaire Corporation, Subsidiary of General Motors Corporation, Dayton, Ohio.

FRIGIDAIRE

Product of General Motors

Group Advertisement of Refrigerating Unit Specifications

ADVERTISEMENT

Absopure

Absopure Refrigeration Corp.,
1560 Theodore St., Detroit,
Mich.

(See advertisement on page 6 of white section)

High Side

Model	Motor	Capacity*
B. G.	1/6 h. p.	125 lbs.
A. B.	1/6 h. p.	125 lbs.
P.	1/6 h. p.	125 lbs.

*Capacity rating in ice-melting effect per 24 hours.
Compressor: Reciprocating. Drive: V-belt. Seal: Absopure bellows. Motor: Wagner or Century. Control: Bishop & Babcock or Ranco temperature. Cooling method: Air. Condenser: Radiator. Refrigerant: Methyl chloride.

Low Side

Model	Capacity	Freezing Trays	Ice Cubes
B. G.	4 1/2 cu. ft.	2	56
A. B.	5 1/2 cu. ft.	2	56
P.	7 cu. ft.	4	112

System: Dry. Cooling method: Direct. Expansion valve: American Radiator bellows.

Model	Motor	Capacity*
CM	1/4 h. p.	200 lbs.
EM	1/3 h. p.	275 lbs.

*Capacity rating in ice-melting effect per 24 hours.

Compressor: Reciprocating. Drive: V-belt. Seal: Absopure bellows. Motor: Wagner or Century. Control: American Radiator temperature or pressure. Cooling method: Air. Condenser: Radiator. Refrigerant: Methyl chloride.

Model	Motor	Capacity*
FM & FMW	1/2 h. p.	375 lbs.
HM & HMW	3/4 h. p.	750 lbs.
IM & IMW	1 h. p.	1000 lbs.
JM & JMW	1 1/2 h. p.	1500 lbs.

*Capacity rating in ice-melting effect per 24 hours.

Compressor: Reciprocating. Drive: V-belt. Seal: Absopure bellows. Motor: Wagner or Century. Control: American Radiator temperature or pressure. Cooling method: Air or water. Water valve: American Radiator electric. Condenser: Radiator or double tube. Refrigerant: Methyl chloride.

Low Side

System: Dry or flooded. Cooling method: Direct. Expansion valve: American Radiator bellows. Float valve: Absopure low side.

Copeland

Copeland Sales Corp., 332 Cass
Ave., Mt. Clemens, Mich.

(See advertisement on page 6 of pink section)

Model	Motor	Capacity*
Q252B	1/2 h. p.	252 lbs.
AM200	1/4 h. p.	200 lbs.

*Capacity rating in ice-melting effect according to I. M. E.

Compressor: Reciprocating. Drive: Belt. Motor: Delco. Control: B & B temperature. Cooling method: Air. Condenser: Radiator. Refrigerant: Methyl chloride.

Model	Motor	Capacity*
RS16B	1/2 h. p.	516 lbs.
WA252B	1 h. p.	825 lbs.
XA1200B	1 1/2 h. p.	1200 lbs.

Compressor: Reciprocating. Drive: Belt. Motor: Delco. Control: Penn temperature. Condenser: Radiator. Refrigerant: Methyl chloride.

Model	Motor	Capacity*
RW516B	1/2 h. p.	516 lbs.
WS252B	1/2 h. p.	825 lbs.
X1200B	1 h. p.	1200 lbs.

Compressor: Reciprocating. Drive: Belt. Motor: Delco. Control: Penn temperature. Condenser: Radiator. Refrigerant: Methyl chloride.

Electro-Kold

Electro-Kold Corp., 151 S. Post
St. Spokane, Wash.

(See advertisement on page 2 of pink section)

High Side

Model	Motor	Capacity*
GFE	1/6 h. p.	50 lbs.
C	1/6 h. p.	90 lbs.
F	1/3 h. p.	160 lbs.
H	1/3 h. p.	240 lbs.
A (air)	1/2 h. p.	450 lbs.
AA (air)	1 h. p.	900 lbs.

Compressor: Reciprocating. Drive: V-belt (Model AA has two V belts). Seal: Electro-Kold diaphragm. Motor: Century. Control: Electro-Kold pressure. Cooling method: Air and water. Water valve: Protectorstat pressure. Condenser: Radiator and spiral coil. Refrigerant: Sulphur dioxide.

*Capacity rating in ice-melting effect according to A. S. R. E. standard ton. Frost units on 12-hour compressor operation per day, and 45° box.

Model	Motor	Capacity*
A (air & water)	1/2 h. p.	500 lbs.
AA (air & water)	1 h. p.	1040 lbs.

Compressor: Reciprocating. Drive: V-belt (Model AA has two V belts). Seal: Electro-Kold diaphragm. Motor: Century. Control: Electro-Kold pressure. Cooling method: Air and water. Water valve: Protectorstat pressure. Condenser: Radiator and spiral coil. Refrigerant: Sulphur dioxide.

Model	Motor	Capacity*
A (water)	1/2 h. p.	500 lbs.
AA (water)	1 h. p.	1040 lbs.
Twin AA	1 1/2 h. p.	2000 lbs.

Compressor: Reciprocating. Drive: V-belt (Model AA has two, and Model Twin AA has four, V belts). Seal: Electro-Kold diaphragm. Motor: Century. Control: Electro-Kold pressure. Cooling method: Water. Water valve: Protectorstat pressure. Condenser: Spiral coil. Refrigerant: Sulphur dioxide.

ADVERTISEMENT

Low Side

Model	Capacity	Freezing Trays	Ice Cubes
29	3 1/2 cu. ft.	2	24
54	5 cu. ft.	2	36
1CFC7			
2CFC7			
3PU9			
EC40		8	180
EC55			
EC37		16	432

System: Flooded. Cooling method: Direct. Float valve: Electro-Kold high side.

Compressor: Dry expansion. Cooling method: Direct. Expansion valve: Electro-Kold diaphragm. Manufactured in capacities down to 60 lbs.

Model 3PU9 is the three-bend, 1 1/2-inch pipe unit, and is manufactured in capacities down to 34 lbs. Model EC40 is in type with ice trays, and is manufactured in capacities as low as 30 lbs. For certain types of commercial applications the Electro-Kold Corp. manufactures cross fin coils and standard fin coils in capacities of 500 lbs. and less.

Electrolux

Electrolux Refrigerator Sales Co.
Evansville, Ind.

(See advertisement on page 13 of white section)

Model	Capacity	Freezing Trays	Ice Cubes
EA-3	3 cu. ft.	4	36
EA-SA	3 cu. ft.	4	36
EA-4	4 cu. ft.	4	36
EA-5	5 cu. ft.	4	40
EA-5B	5 cu. ft.	5	45
EA-8	8 cu. ft.	6	60
EA-10A	10 cu. ft.	7	70
EA-18	18 cu. ft.	14	140
EA-20	20 cu. ft.		
EA-U	2 1/2 cu. ft.	7	196

Chilling unit is integral part of compact, one-piece Electrolux unit. Neither chilling unit nor complete unit has moving parts or machinery. The sealed-in refrigerating liquids and gases do not change, nor do they need replacement. System of tubes and chambers is steel and copper, properly welded and sealed at factory. Entire unit is contained inside cabinet.

Frick

Frick Co., Waynesboro, Pa.

(See advertisement on page 6 of yellow section)

High Side

Model	Motor	Capacity*
1 1/2	1 h. p.	0.52
3S	3 h. p.	1.16
3D	2.32 h. p.	2.32

*Capacity rating in ice-melting effect according to A. S. R. E. standard ton.

Compressor: Reciprocating. Drive: V-belt (Model 1 1/2 has direct drive). Seal: Frick. Motor: All makes. Control: Temperature. Cooling method: Water. Water valve: "Dependable" pressure. Condenser: Shell and tube. Refrigerant: Ammonia.

Low Side

System: Dry or flooded. Cooling method: Direct or indirect. Expansion valve: Diaphragm. Float valve: Frick high or low side.

Frigidaire

Frigidaire Corp., Dayton, Ohio

(See advertisement on page 3 of pink section)

High Side

Model	Motor	Capacity*
V	1/2 h. p.	.105
N	1/2 h. p.	.25
U	1/2 h. p.	.35
C	1 h. p.	.5

*Capacity rating (A. S. R. E. standard ton).

Compressor: Reciprocating. Drive: V-belt (Double V belt on models C and U). Seal: Frigidaire bellows. Motor: Frigidaire. Control: Frigidaire low pressure. Cooling method: Water. Water valve: Frigidaire auto. pressure. Condenser: Shell and tube. Refrigerant: Sulphur dioxide.

Model	Motor	Capacity*
F	1/2 h. p.	.05
A & B	1/2 h. p.	.091
K	1/2 h. p.	.135
O	1/2 h. p.	.2
R	1/2 h. p.	.35
D	1 1/2 h. p.	.5

Compressor: Reciprocating. Drive: V-belt (Double V belt on models D & R). Seal: Frigidaire bellows. Motor: Frigidaire. Control: Frigidaire low pressure. Cooling method: Air. Condenser: Radiator (plain tube type used on model K). Refrigerant: Sulphur dioxide.

Slow speed and over size motor refrigerating units are furnished for special applications.

Low Side

Model	Freezing Trays	Ice Cubes
110TF & 111TF	2	24
115TF	2	42
2TF	2	42
6TF	3	54
10TF	4	72
59TF	4	96
12	4	96
16	6	144
60TF	6	144
18TF	7	168

System: Flooded. Cooling method: Direct. Float valve: Frigidaire low side.

Also manufacture 29 models of air-cooled commercial coils, and nine liquid-cooled models. All coils operate on flooded system. Frigidaire low side float valve used.

ADVERTISEMENT

General Electric

General Electric Co., Hanna Bldg.,
Cleveland, Ohio

(See advertisement on page 3 of white section)

High Side

Model	Motor	Capacity*
DR-1	1/10 h. p.	50 lbs.
DR-2	1/6 h. p.	70 lbs.
DR-3	1/6 h. p.	110 lbs.
DR-4	1/3 h. p.	233 lbs.
DR-5	1/2 h. p.	350 lbs.

*Capacity rating in ice-melting effect according to A. S. R. E. standard ton; 80° F. room, 20° F. evaporator. Compressor: Reciprocating. Drive: Direct. Enclosed motor hermetically sealed. Motor: General Electric. Control: General Electric temperature. Cooling method: Air. Condenser: Plain tube. Refrigerant: Sulphur dioxide.

Low Side

Model	Capacity	Freezing Trays	Ice Cubes
DR-1	4 cu. ft.	2	48
DR-2	6 cu. ft.	4	96
DR-3	10, 14, 17	4	84
DR-4	27 cu. ft.		
DR-5	45-60 cu. ft.		

System: Flooded. Cooling method: Direct. Float valve: General Electric high side.

High Side

Model	Motor	Capacity*
DR-40	1/3 h. p.	200 lbs.
DRF-4	1/3 h. p.	233 lbs.
DRD-4	1/2 h. p.	350 lbs.

*Capacity rating in ice-melting effect according to A. S. R. E. standard ton; 80° F. room, 20° F. evaporator. Model DRD-4, milk cooler, has 40° F. evaporator.

Compressor: Reciprocating. Drive: Direct. Enclosed motor hermetically sealed. Motor: General Electric. Control: General Electric temperature. Cooling method: Air. Condenser: Plain tube. Refrigerant: Sulphur dioxide.

Low Side

Model	Capacity	Freezing Trays	Ice Cubes
D-40	14-18 cu. ft.	4	84
DRF-4		12	251
DRD-4			

System: Flooded. Direct (also indirect in model D-40). Float valve: General Electric high side.

International

International Oil Heating Co.
3800-10 Park Street
St. Louis, Mo.

(See advertisement on page 12 of white section)

High Side

Compressor: Gyrotory. Drive: Belt. Seal: Carrey eccentric generating. Motor: Wagner, in 1/6, 1/4, 1/2 and 1/2 h. p. sizes. Control: Ranco and Penn pressure and temperature. Cooling method: Air. Condenser: Radiator. Refrigerant: Sulphur dioxide and methyl chloride. Capacity rating in ice-melting 100 to 350 lbs.

Low Side

System: Dry or flooded. Cooling method: Direct or indirect. Expansion valve: American bellows. Float valve: Fedders low side. Capacity in cubic feet of cabinet, 4 to 20. Number of freezing trays, 2 to 6. Number of ice cubes, 56 to 216.

Juruick

American Engineering Co.
Aramingo Ave. and Cumberland
St., Philadelphia, Pa.

(See advertisement on page 15 of white section)

Model	Motor	Capacity*
Cub	1/4 h. p.	1/2 ton
AC-1	1 h. p.	1 ton
AC-2	2 h. p.	1 ton
AC-3	5 h. p.	2 tons
AC-4	7 1/2 h. p.	4 tons
AC-5A	10 h. p.	5 1/2 tons

Compressor: Reciprocating. Drive: V-belt. Motor: General Electric (Master motor used on Cub and AC-1 models). Control: Temperature. Cooling method: Water. Water valve: Spence pressure. Condenser: Shell and tube (submerged coil used on Cub model). Refrigerant: Ammonia.

Kelvinator

Kelvinator Corp., 14250 Plymouth
Rd., Detroit, Mich.

(See advertisement on page 5 of white section)

High Side

Model	Motor	Capacity*
F-11, 4951	1/3 h. p.	15 lbs.
WF-21, 4952	1/3 h. p.	17 lbs.
F-31, 4953	1/2 h. p.	22 lbs.
WF-41, 4954	1/2 h. p.	23 lbs.
WR-41, 4958	1 h. p.	47 lbs.
F-35, 4964	1/2 h. p.	14 lbs.
WF-45, 4965	1/2 h. p.	17 lbs.
F-55, 4966	1/2 h. p.	23 lbs.
WF-65, 4967	1/2 h. p.	24 lbs.

*Capacity rating in pounds per hour ice-melting effect according to A. S. R. E. standard ton.

Compressor: Reciprocating. Drive: Belt. Seal: Kelvinator patented bellows. Motor: Delco, General Electric, Wagner or Westinghouse. Control: Kelvinator.

ADVERTISEMENT

pressure. Cooling method: Water. Water valve: Kelvinator pressure. Condenser: Radiator. Refrigerant: Sulphur dioxide.

FM-35, 4971	1/2 h. p.	22 lbs.
FM-55, 4972	1/2 h. p.	34 lbs.

Compressor: Reciprocating. Drive: Belt. Seal: Kelvinator patented bellows. Motor: Delco, General Electric, Wagner or Westinghouse. Control: Kelvinator temperature. Cooling method: Air. Condenser: Radiator. Refrigerant: Methyl chloride.

F-10ED, 4974		15 lbs.
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Compressor: Reciprocating. Drive: Belt. Seal: Kelvinator patented bellows. Motor: Gas engine. Cooling method: Air. Condenser: Radiator. Refrigerant: Sulphur dioxide.

C-12, 4975	1/10 h. p.	4 lbs.
C-10, 4977	1/6 h. p.	4 1/2 lbs.
L-23, 4978	1/2 h. p.	6 1/2 lbs.

Compressor: Reciprocating. Drive: Belt. Seal: Kelvinator patented bellows. Motor: Delco or Wagner. Cooling method: Air. Condenser: Radiator. Refrigerant: Sulphur dioxide.

L-22, 4979	1/5 h. p.	7 1/2 lbs.
C-11, 4982	1/6 h. p.	4 lbs.
L-21, 4983	1/2 h. p.	7 1/2 lbs.

Compressor: Reciprocating. Drive: Belt. Seal: Kelvinator patented bellows. Motor: Delco. Cooling method: Air. Condenser: Radiator. Refrigerant: Sulphur dioxide.

L-M-20, 4984	1/2 h. p.	11 lbs.
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Compressor: Reciprocating. Drive: Belt. Seal: Kelvinator patented bellows. Motor: Delco or Wagner. Cooling method: Air. Condenser: Radiator. Refrigerant: Methyl chloride.

J-19, 4985	1/6 h. p.	4 lbs.
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Compressor: Reciprocating. Drive: Belt. Seal: Kelvinator patented bellows. Motor: Delco or Wagner, single phase repulsion induction. Cooling method: Air. Condenser: Radiator. Refrigerant: Sulphur dioxide.

S-16, 4986	1/2 h. p.	7 1/2 lbs.
S-17, 4987	1/3 h. p.	9 1/2 lbs.

Compressor: Reciprocating. Drive: Belt. Seal: Kelvinator patented bellows. Motor: Delco, Wagner or Westinghouse. Cooling method: Air. Condenser: Radiator. Refrigerant: Sulphur dioxide.

SM-15, 4988	1/3 h. p.	17 lbs.
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Compressor: Reciprocating. Drive: Belt. Seal: Kelvinator patented bellows. Motor: Delco, Wagner or Westinghouse. Cooling method: Air. Condenser: Radiator. Refrigerant: Methyl chloride.

J-20, 4989	1/2 h. p.	4 1/2 lbs.
J-21, 4990	1/6 h. p.	5 lbs.

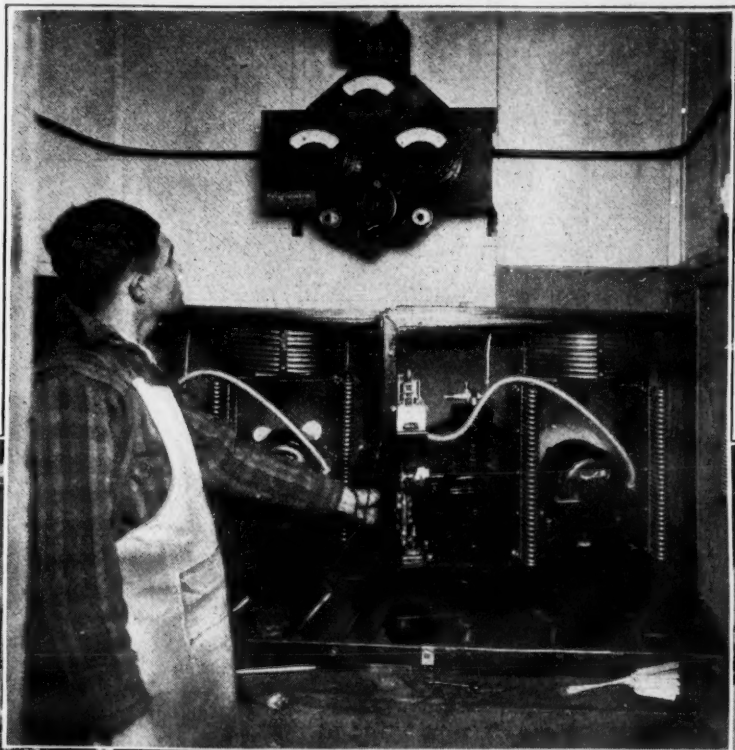
Compressor: Reciprocating. Drive: Belt. Seal: Kelvinator patented bellows. Motor: Delco or Wagner, single phase repulsion induction. Cooling method: Air. Condenser: Radiator. Refrigerant: Sulphur dioxide.

S-15, 4991	1/3 h. p.	11 lbs.
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Compressor: Reciprocating. Drive: Belt. Seal: Kelvinator patented bellows. Motor: Delco, Wagner or Westinghouse. Control: Kelvinator pressure. Cooling method: Air. Condenser: Radiator. Refrigerant: Sulphur dioxide.

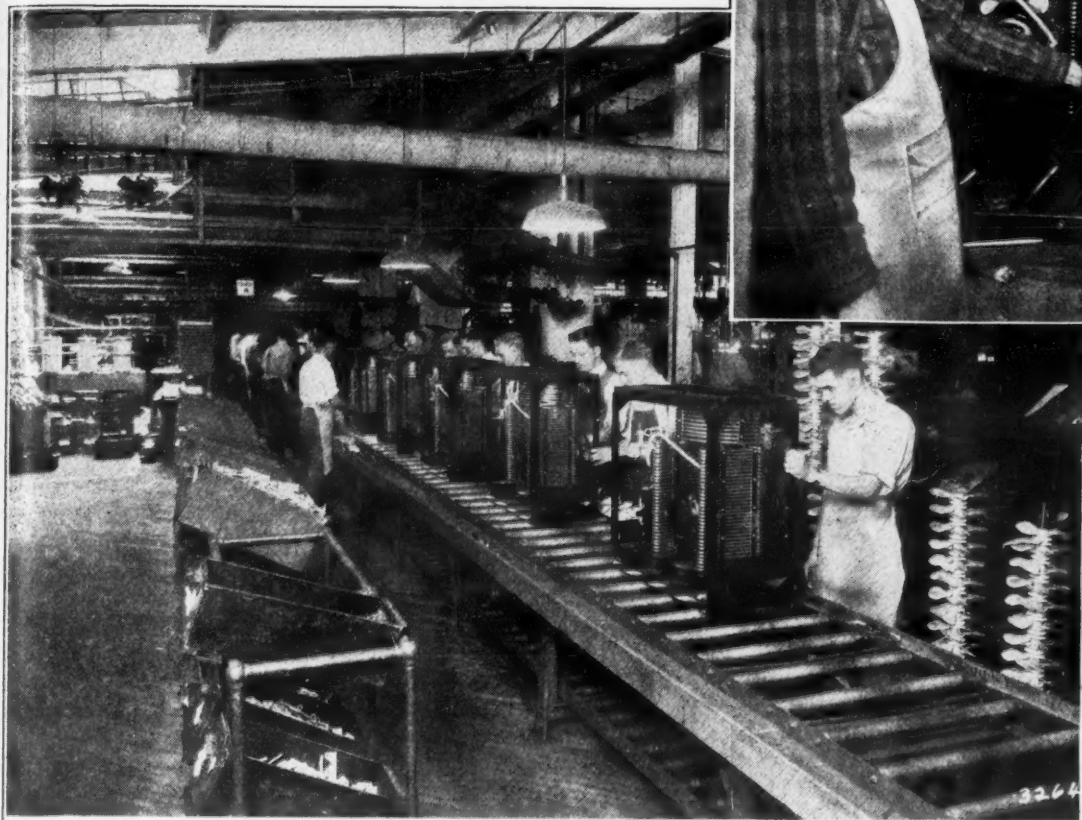
How Frigidaire

"We progress through quality, workmanship, and service." Signs bearing these words are posted at conspicuous places throughout the factories which make Frigidaire electric refrigerators. On this page are a number of pictures of steps in the making of refrigerating units in Frigidaire plant No. 1 in Dayton. As can be seen from the pictures, heavy quantity production, as well as thoroughgoing workmanship, is one of the chief aims.

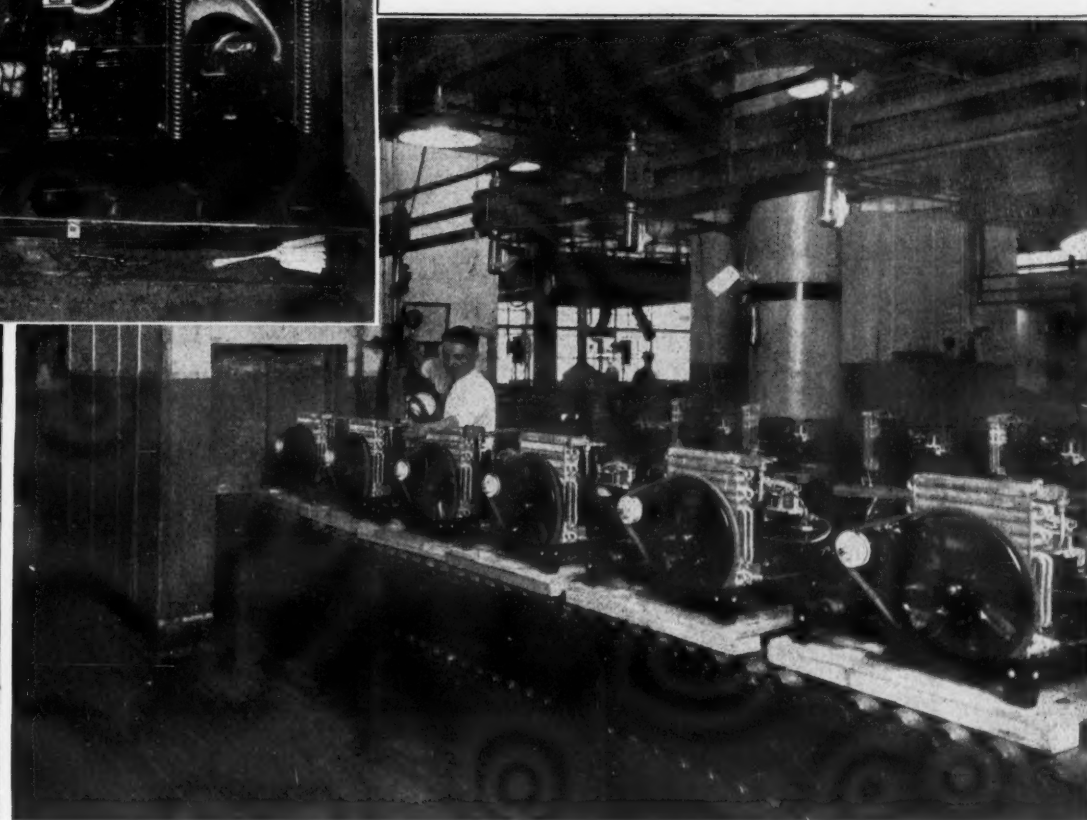


Units Are Made

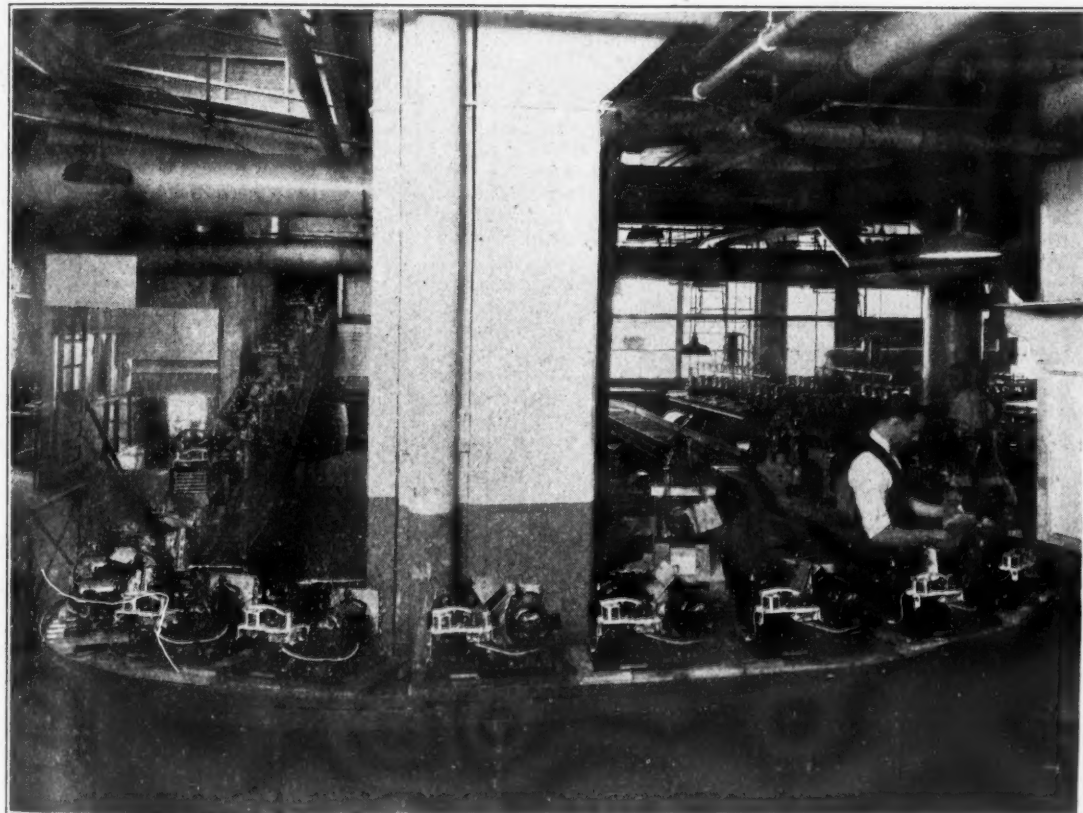
In the top center picture a Frigidaire engineer is testing motors and compressors for efficiency. This picture is typical of many similar operations in the Frigidaire plants. Testing is considered of paramount importance. All along the line the various parts are subjected to various tests, as well as the completed jobs. Not satisfied with the work of this nature done in plant No. 1, further check-ups are made at the Moraine plant.



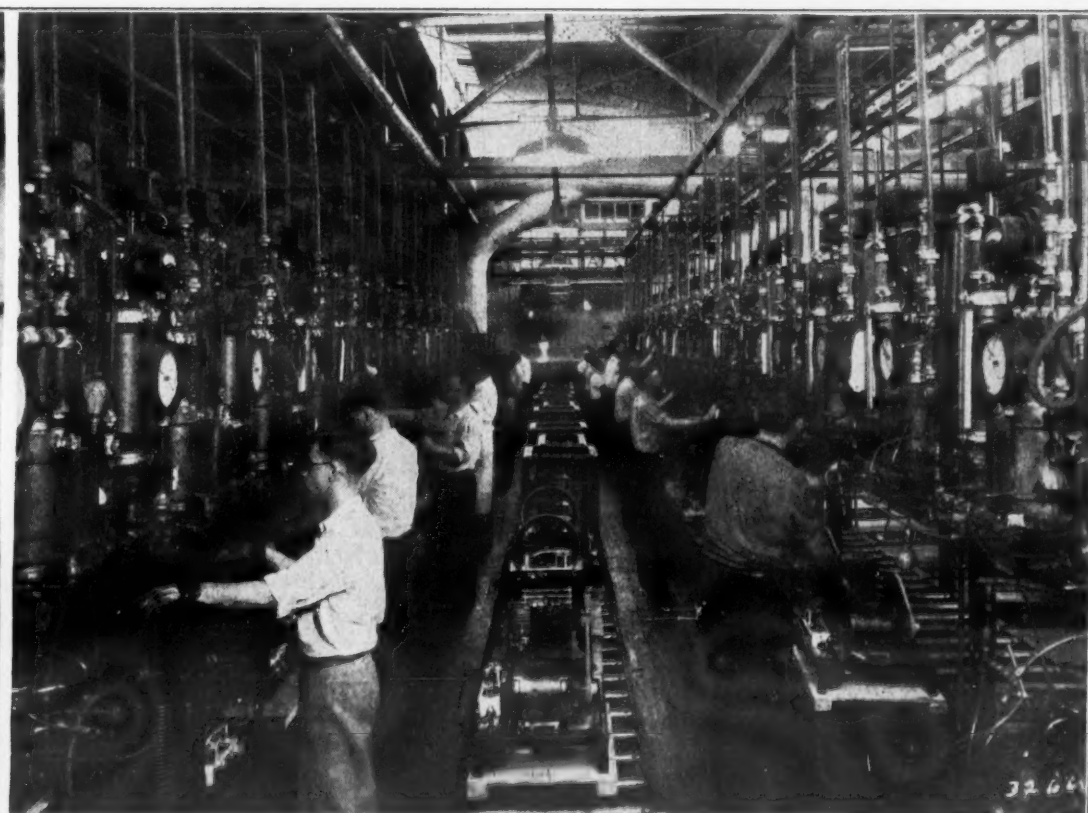
Commercial compressors are assembled on the line shown above.



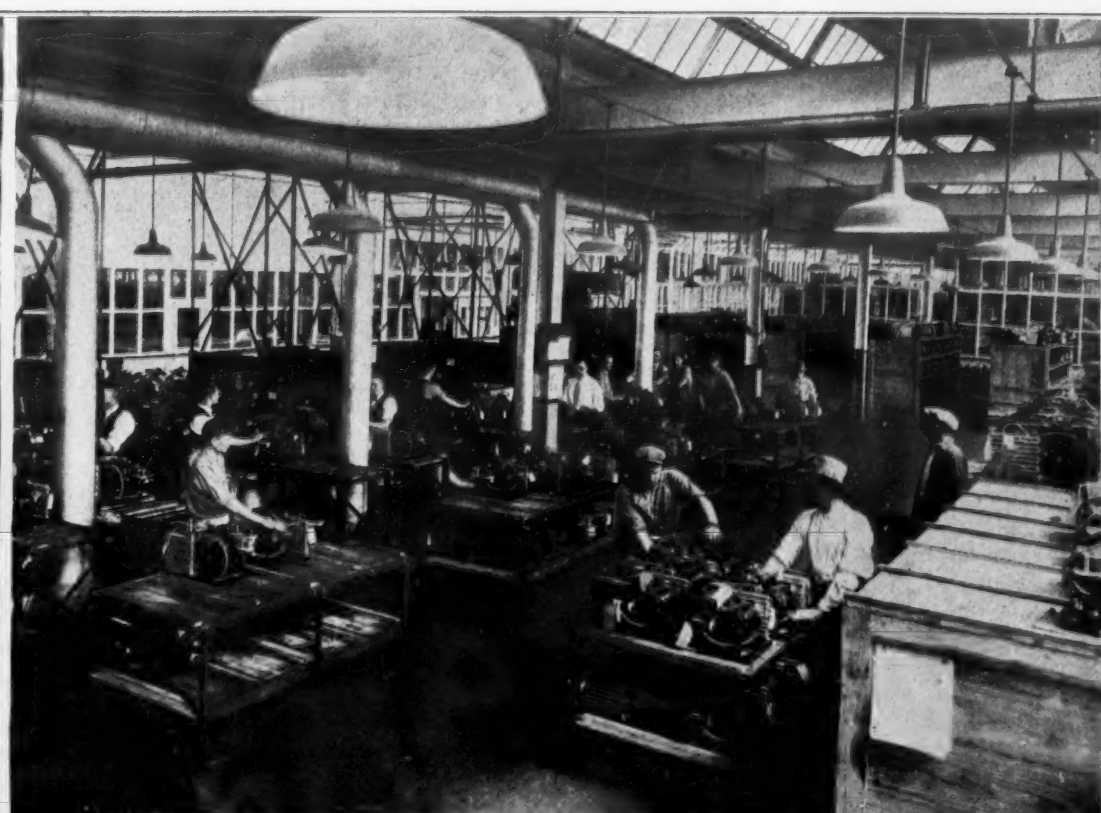
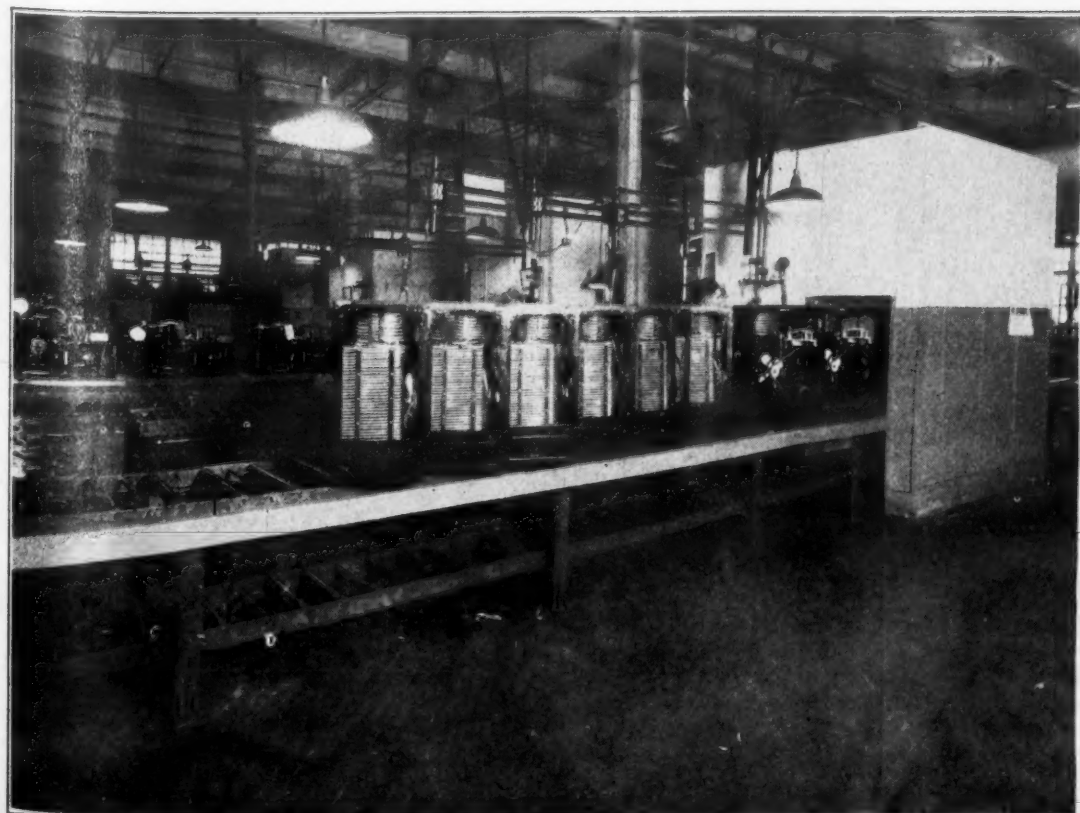
This workman is testing the capacity of household compressors.



Above: Headed for charging room. Below: Ready for "quiet test."



Above: Charging compressors with refrigerant. Below: Final check.



Unit Specifications

ADVERTISEMENT

(Concluded from Page 4, Column 5)

Flooded: Servel chilling sections and Servel-Larkin sections—flooded or dry. **Cooling method:** Servel submersion coils for indirect; Servel and Servel-Larkin coils for direct. **Expansion valve:** American Radiator automatic or thermo-expansion bellows. **Float valve:** Servel low side.

Servel Hermetic: Hermetically sealed refrigerating unit. Reciprocating type compressor, direct drive, 1/4 h. p. motor, 100 lbs. capacity—rating in ice-melting effect 20° F. gas, 75° F. cooling water, 24 hours operation. Three, four and five cu. ft. boxes. Three trays, 12 cubes each.

Trupar

Trupar Manufacturing Co.
Dayton, Ohio

(See advertisement on page 4 of white section)

High Side

Model	Motor	Capacity*
E-41	1/6 h. p.	50 lbs.
E-51 & E-52	1/6 h. p.	50 lbs.

*Capacity rating in ice-melting effect according to A. S. R. E. standard ton. **Compressor:** Reciprocating. **Drive:** Belt. **Seal:** Trupar vacuum. **Motor:** Master. **Control:** Trupar pressure. **Cooling method:** Air. **Condenser:** Fin. **Refrigerant:** Sulphur dioxide.

Low Side

Model	Capacity	Freezing Trays	Ice Cubes
E-41	4 cu. ft.	2	56
E-51 & E-52	5 cu. ft.	3	84
D	3	3	72
B	4	4	112
C	4	4	96

System: Flooded. **Cooling method:** Direct. **Float valve:** Trupar low side.

Domestic Compressors

Model	Motor	Capacity*
70	1/6 h. p.	70 lbs.
75	1/6 h. p.	75 lbs.
100	1/6 h. p.	100 lbs.
150	1/4 h. p.	150 lbs.
200	1/4 h. p.	200 lbs.

*Capacity rating in ice-melting effect according to A. S. R. E. standard ton. **Compressor:** Reciprocating. **Drive:** Belt. **Seal:** Trupar vacuum. **Motor:** Master. **Control:** Trupar pressure. **Cooling method:** Air. **Condenser:** Fin. **Refrigerant:** Sulphur dioxide.

Commercial Compressors

Model	Motor	Capacity*
250	1 1/3 h. p.	225 lbs.
500	1 h. p.	500 lbs.
1000	1 1/2 h. p.	1000 lbs.

*Capacity rating in ice-melting effect according to A. S. R. E. standard ton. **Compressor:** Reciprocating. **Drive:** Belt. **Seal:** Trupar vacuum. **Motor:** Master. **Control:** Trupar pressure. **Cooling method:** Air. **Condenser:** Fin. **Refrigerant:** Sulphur dioxide.

Model	Motor	Capacity*
351	1 1/3 h. p.	250 lbs.

Compressor: Reciprocating. **Drive:** Belt. **Seal:** Trupar vacuum. **Motor:** Master. **Control:** Trupar pressure. **Cooling method:** Water. **Water valve:** Trupar pressure. **Condenser:** Fin. **Refrigerant:** Sulphur dioxide.

Model	Motor	Capacity*
501	1/2 h. p.	500 lbs.
502	1 h. p.	500 lbs.
1001	1 h. p.	1000 lbs.
1002	1 1/2 h. p.	1000 lbs.

Compressor: Reciprocating. **Drive:** Belt. **Seal:** Trupar vacuum. **Motor:** Master. **Control:** Trupar pressure. **Cooling method:** Water. **Water valve:** American Radiator electric. **Condenser:** Fin. **Refrigerant:** Sulphur dioxide.

ADVERTISEMENT

Universal Cooler

Universal Cooler Corp., 18th and Howard Sts., Detroit, Mich.

Domestic

(See advertisement on page 16 of white section)

High Side

Model	Motor	Capacity*
16-S	1/6 h. p.	50 lbs.

*Capacity rating based on 0 lbs. back pressure and 14 hours' running time.

Compressor: Reciprocating. **Drive:** Belt. **Seal:** Universal Cooler siphon. **Motor:** General Electric capacitor. **Control:** Ranco & Penn temperature and pressure. **Cooling method:** Air. **Condenser:** Radiator. **Refrigerant:** Sulphur dioxide.

Model	Motor	Capacity*
16	1/6 h. p.	50 lbs.

Compressor: Reciprocating. **Drive:** Belt. **Seal:** Universal Cooler siphon. **Motor:** Wagner (unless otherwise specified). **Control:** Ranco & Penn temperature and pressure. **Cooling method:** Air. **Condenser:** Radiator. **Refrigerant:** Methyl chloride.

Model	Motor	Capacity*
25-S	1/4 h. p.	81 lbs.

Compressor: Reciprocating. **Drive:** Belt. **Seal:** Universal Cooler siphon. **Motor:** Wagner (unless otherwise specified). **Control:** Ranco & Penn temperature and pressure. **Cooling method:** Air. **Condenser:** Radiator. **Refrigerant:** Sulphur dioxide.

Model	Motor	Capacity*
25	1/4 h. p.	81 lbs.

Compressor: Reciprocating. **Drive:** Belt. **Seal:** Universal Cooler siphon. **Motor:** Wagner (unless otherwise specified). **Control:** Ranco & Penn temperature and pressure. **Cooling method:** Air. **Condenser:** Radiator. **Refrigerant:** Methyl chloride.

Low Side

Model	Capacity	Freezing Trays	Ice Cubes
AR2	7 cu. ft.	2	56
AR3	10 cu. ft.	3	84
05	5 cu. ft.	3	63
610	10 cu. ft.	3	63
1014	14 cu. ft.	5	105
1420	20 cu. ft.	6	126

System: Dry. **Cooling method:** Direct (AR2 and AR3); Indirect (05, 610, 1014 and 1420). **Expansion valve:** American Radiator bellows.

Commercial

Model	Motor	Capacity*
25-P	1/4 h. p.	97 lbs.
33	1/3 h. p.	217 lbs.
33-P	1/3 h. p.	217 lbs.
50	1/2 h. p.	336 lbs.
75	3/4 h. p.	420 lbs.
150	1 1/2 h. p.	660 lbs.

*Capacity based on 16 lbs. back pressure, 14 hours' running time.

Compressor: Reciprocating. **Drive:** Belt. **Seal:** Universal Cooler siphon. **Motor:** Wagner (unless otherwise specified). **Control:** Penn pressure (Penn temperature used on model 33-P). **Cooling method:** Air. **Condenser:** Radiator. **Refrigerant:** Methyl chloride.

Model	Motor	Capacity*
50-W	1/2 h. p.	442 lbs.
75-W	3/4 h. p.	490 lbs.
100-W	1 h. p.	700 lbs.
150-W	1 1/2 h. p.	812 lbs.

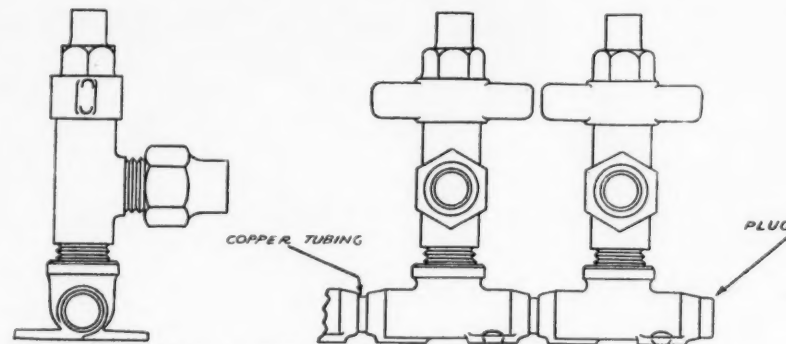
Compressor: Reciprocating. **Drive:** Belt. **Seal:** Cooke siphon (except on models 50-W and 75-W, which use Universal Cooler siphon seals). **Motor:** Wagner. **Control:** Penn dual pressure. **Cooling method:** Water. **Water valve:** Penn pressure. **Condenser:** Radiator. **Refrigerant:** Methyl chloride.

Low Side

Larkin low side equipment used for commercial installations.

New Manifold for Multiples

MUELLER STREAMLINE MANIFOLD VALVE ASSEMBLY



Patents 1770862 and 1776502. Other patents pending.

With one standard fitting, the installer can make up any size of manifold desired. See story below.

Mueller Engineers Teach Plumbers New Tricks

(Concluded from Page 1, Column 4)

brightens the end of it back an inch or more with sand cloth. Then he brightens the inside of the fitting to remove any accumulation of tarnish. He slides the tube into the fitting. It goes in easily, not tight, not loose—just a close fit.

On the bench is a burning blow torch. He picks it up with his right hand and a roll of wire solder in his left. The flames strike the fitting and after a few seconds he touches the solder to the little hole in the fitting. A few more seconds and the solder starts to flow. Capillary attraction pulls the solder into the space between tube and fitting. It appears at the edge of the fitting all around the tube. The job is completed.

Now it is put into a testing machine, designed to pull things apart. It pulls—hundreds of pounds. Finally the tube gives, stretches and ruptures, but the joint remains secure.

Series of Joints Made

Again a series of joints are made. The system is put under pressure. There are no leaks. Steam, hot water, all manner of tests are applied, until no question remains about the tightness of the joint.

The visitor is convinced but the demonstrator is not through. There is another act in the performance—the salvage operation. With a pair of pliers in his right hand and the blow torch in his left, he applies the flame to one of the joints. In a few seconds the fitting is removed—the joint is unjoined.

The operation is repeated until the system is once more a series of tubes and fittings—all in perfect condition for use again.

But that is not all. There are some other tricks to be shown. "Now suppose that we want a manifold for a multiple job," says the demonstrator. "We make manifolds out of square brass bars with threaded taps to receive the various fittings. The dealer carries several sizes in stock, but frequently finds it neces-

sary to send a rush order for a manifold to fit a particular job. That was the old way. Now see how it is done the new way."

Here the demonstrator picks up a fitting as shown in the diagram above. A short piece of copper tubing is fitted in one end and a joint made. Another fitting exactly like the first is added to the other end of the short copper tube. Another tube, another fitting, and so on until six, eight, thirteen or any number of branch lines are provided for. The liquid line from the compressor goes into one end and the other is plugged.

Thus it is only necessary for the dealer to stock a supply of one kind of fitting and a few plugs and he has all the material necessary to make manifolds of any size on the job.

Further Applications

But what has all of this to do with the plumbers and steamfitters? Having discovered a simple way to make a pipe joint for refrigerant lines, the Mueller people said: "Why not do the same thing with water pipes?" Now everybody knows that copper and brass make a better plumbing installation than ordinary iron pipe, but the extra cost has retarded popular acceptance of these metals except where the buyer was willing to pay for quality and in certain sections of the country where atmospheric conditions or impurities in the water cause excessive corrosion.

Another retarding influence has been the plumber. It is harder to make a tight joint with brass than it is with iron. A slight leak in an iron pipe joint is no bother for rust will quickly form and close up the leak. It is not so with brass pipe—the leak simply keeps on leaking—the joint must be taken apart and made over. The writer of this article has made many a joint with both iron and brass fittings and can easily appreciate the plumber's viewpoint.

Threaded Ends Weak

But let us examine those threads in a piece of pipe more closely. When the die is removed we find that it is has cut through one-half or more than half of the thickness of the metal. Obviously, the strength of the pipe is greatly reduced by cutting the threads. If the threads were unnecessary the pipe wall might be only one-half as thick and still have the same strength. In other words, the threaded ends of the pipe are the weakest points.

The entire length of pipe must be made so thick simply to provide for cutting threads where necessary. Obviously, there is a considerable saving in metal with the Mueller system, and this saving makes copper pipe competitive in cost with iron pipe.

Steam Pipe

The same thing applies to steam pipe. Also, as the diameter of the pipe increases, other advantages appear. The Mueller people can make a coupling in a pipe 4 inches or 6 inches in diameter, just as easily as with the small tubing used by the refrigerating industry. Furthermore, alterations may be made, or the whole system salvaged, in very short order. Only certain grades of solders are used, of course, and when the job involves steam or other high temperature work, a special solder is furnished which has a high melting point.

So the Mueller people, having solved a problem in copper, have run smack into another problem in psychology. Psychology, or economics, or advertising or something.

Copeland
DEPENDABLE
ELECTRIC
REFRIGERATION

Economy Important In Frigidaire Factories

(Concluded from Page 1, Column 1)

main arteries bisect each other, traffic is so heavy that electric stop-and-go signal lights have actually been erected to govern it. Messenger boys wend their way on roller skates in and out of the various departments. Tractors haul loads outside the buildings.

While "extensive" seems to be the one word which can be applied to the Moraine factory, "compressed" is the adjective which best fits plant No. 1.

A "street" divides the room in which the parts for the units are made. On the left are the machines which turn out compressors. The right-hand section is devoted to the manufacturing of the remainder of the refrigerating unit.

In the left-hand section another and smaller "street" separates the section of machines which turn out cylinder blocks and other stationary parts, and those which make the small moving parts that complete the compressor.

Still further division of this room is made according to the size of the unit for which the particular parts are intended. Each row of machines, extending the entire length of the factory, fashions a part for one size of unit; and these rows are grouped according to the type of part they make. One squadron of rows, for instance, makes all the piston pins for the various sizes of compressors.

Inspectors On the Job

At the end of each of these rows sits an inspector. If, when, and after he has passed upon the worthiness of a part, it is placed on a conveyor belt and started off on a journey at right angles to the one it has just completed.

Out at the Moraine plant inspection and testing is an especially important task, too. A brand new room has just been built in this lengthy structure, in which place all complete refrigerators will be tested for six hours at a temperature of 95° F. before shipping. This room has hardwood floors, heavily insulated walls, and is large enough to serve as a first-class ballroom.

Another interesting test room is the "silence chamber." This is a hidden-away cubby-hole barely large enough for a refrigerator and two or three men. It is so impregnable to sound waves that the railroad trains which run within 60 feet of it cannot be heard inside, even when they whistle.

"Saving" is the watchword at the Moraine plant. If anything is wasted or discarded at this factory, it isn't because Frigidaire engineers haven't spent sleepless nights trying to evolve a solution.

Shavings Fed To 'Pig'

Shavings and miscellaneous discarded odds and ends of wood are fed into a voracious device dubbed "the pig," which chews up all varieties of scrap wood into fine fuel for the power house boilers.

"Rock cork," an insulating material made of fused Indiana limestone and asbestos fibre, is used in Frigidaire cabinets. All cuttings and scraps of this material are dumped into a machine, which crushes it, mixes it with benzine and rosin, and shapes it around molds. After drying and hardening, this reclaimed insulation is used for the lids of Frigidaire ice cream cabinets. The whole process was the invention of a Frigidaire employee.

The world's largest porcelain enameling plant is located in the Moraine factory. Here, too, nothing is wasted. Surplus hot air from the baking ovens, for instance, is used to heat the drying room.

All over both factories big signs are plastered which read: "We progress through quality, workmanship, and service." This is the motto of Frigidaire production, and is a fitting theme for a manufacturing symphony in which magnitude, numbers, and efficiency are dominant and ever-recurring chords.

Manufacturers Present New Unit Models

(Concluded from Page 1, Column 5)

Yukon model, which features a unit removable with a screw-driver. Frigidaire also brought out new low-priced models of extreme simplicity.

Westinghouse and Majestic have entered the fray during the year with streamline refrigerators which bear the unit in the top. The former may be removed from the back of the machine, while the latter lifts out of the top. Both units employ some unusual applications of mechanical refrigeration principles.

Older companies in the business have been making good capital out of the reserve power contained in their conventional type of units by bringing out models which have remarkably fast freezing times, and which get very low temperatures with a minimum of running time.

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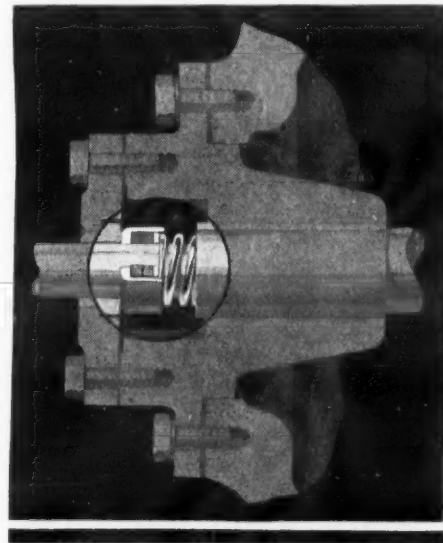
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